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Revision of the Genus *Diatrichalus* Kleine from New Guinea (Coleoptera: Lycidae)

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With 55 figures

Summary

New Guinean species of the genus *Diatrichalus* Kleine, 1926 are revised. Altogether 27 *Diatrichalus* species were found, 17 of them are described here: *Diatrichalus aeneus* sp. n., *D. bipunctatus* sp. n., *D. dilatatus* sp. n., *D. emarginatus* sp. n., *D. fasciatus* sp. n., *D. fenestratus* sp. n., *D. habbema* sp. n., *D. humeralis* sp. n., *D. pallidihumeralis* sp. n., *D. parallelus* sp. n., *D. piper* sp. n., *D. proprius* sp. n., *D. rubricostatus* sp. n., *D. schawalleri* sp. n., *D. sedlacekiae* sp. n., *D. striatus* sp. n., and *D. wauensis* sp. n.

Additional 6 species were combined for the first time with *Diatrichalus* Kleine, 1926, all of them were originally placed in *Trichalus* Waterhouse, 1877: *D. cyanescens* (Bourgeois, 1900), **comb. n.**, *D. dentatus* (Kleine, 1926), **comb. n.**, *D. mancus* (Kleine, 1926), **comb. n.**, *D. metallicus* (Kleine, 1935), **comb. n.**, *D. secretus* (Kleine, 1935), **comb. n.** and *D. sinuaticollis* (Pic, 1923), **comb. n.** *D. ternatensis* Kleine, 1930 is transferred to the genus *Trichalus* Waterhouse, 1877.

Four species earlier classified in *Diatrichalus* from New Guinea are redescribed, illustrations of critical morphological characters and a key for New Guinean *Diatrichalus* are provided. The relationships between species are shortly discussed.

The following species known from adjacent areas are proposed to be members of the genus *Diatrichalus* Kleine, 1926 – from the genus *Trichalus* Waterhouse, 1877: *Diatrichalus aptus* (Kleine, 1926), **comb. n.**, *D. assimilis* (Kleine, 1926), **comb. n.**, *D. funereus* (Blackburn, 1900), **comb. n.**, *D. insulanus* (Kleine, 1933), **comb. n.**, *D. kershawi* (Lea, 1908), **comb. n.**, *D. niger* (Waterhouse, 1879) **comb. n.**, *D. semicostatus* (Blackburn, 1891), **comb. n.**, *D. signatus* (Kleine, 1939), **comb. n.**, *D. typicus* (Kleine, 1939), **comb. n.**; from the genus *Flabellotrichalus* Pic, 1921: *Diatrichalus vicarius* (Kleine, 1935), **comb. n.**, *D. puerilis* (Kleine, 1935), **comb. n.**, and *D. salomonensis* (Kleine, 1933), **comb. n.**

The following species names are considered to be junior subjective synonyms: *Trichalus nigricolor* Pic, 1927, **syn. n.**, *Trichalus niger* var. *notaticollis* Pic, 1927, **syn. n.**, *Trichalus niger* var. *angustatus* Pic, 1927, **syn. n.** and *Diatrichalus concolor* Kleine, 1927, **syn. n.** [all of *D. niger* (Waterhouse, 1879)]; *Trichalus completus* Pic, 1923, **syn. n.** [= *Diatrichalus cerberus* (Bourgeois, 1900)].

Zusammenfassung

Die Arten der Gattung *Diatrichalus* Kleine, 1926, aus Neu Guinea werden revidiert. Insgesamt werden 27 *Diatrichalus*-Arten nachgewiesen, 17 davon werden hier beschrieben: *Dia-*

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trichalus aeneus sp. n., *D. bipunctatus* sp. n., *D. dilatatus* sp. n., *D. emarginatus* sp. n., *D. fasciatus* sp. n., *D. fenestratus* sp. n., *D. habbema* sp. n., *D. humeralis* sp. n., *D. pallidihumeralis* sp. n., *D. parallelus* sp. n., *D. piper* sp. n., *D. proprius* sp. n., *D. rubricostatus* sp. n., *D. schawalleri* sp. n., *D. sedlacekiae* sp. n., *D. striatus* sp. n. und *D. wauensis* sp. n.

Zusätzliche 6 Arten werden erstmalig *Diatrichalus* Kleine, 1926, zugeordnet, alle waren ursprünglich unter *Trichalus* Waterhouse, 1877, beschrieben: *D. cyanescens* (Bourgeois, 1900), **comb. n.**, *D. dentatus* (Kleine, 1926), **comb. n.**, *D. mancus* (Kleine, 1926), **comb. n.**, *D. metallicus* (Kleine, 1935), **comb. n.**, *D. secretus* (Kleine, 1935), **comb. n.** und *D. sinuaticollis* (Pic, 1923), **comb. n.**, *D. ternatensis* Kleine, 1930, wird in die Gattung *Trichalus* Waterhouse, 1877, überführt.

Vier Arten aus Neu Guinea, die schon früher zu *Diatrichalus* gestellt wurden, werden neu beschrieben, Abbildungen entsprechender morphologischer Merkmale und ein Bestimmungsschlüssel der *Diatrichalus*-Arten aus Neu Guinea werden mitgeteilt. Die Verwandtschaftsbeziehungen zwischen den Arten werden kurz diskutiert.

Die folgenden Arten, bekannt aus den angrenzenden Gebieten, werden ebenfalls zur Gattung *Diatrichalus* Kleine, 1926, gestellt – aus der Gattung *Trichalus* Waterhouse, 1877: *Diatrichalus aptus* (Kleine, 1926), **comb. n.**, *D. assimilis* (Kleine, 1926), **comb. n.**, *D. funereus* (Blackburn, 1900), **comb. n.**, *D. insulanus* (Kleine, 1933), **comb. n.**, *D. kershawi* (Lea, 1908), **comb. n.**, *D. niger* (Waterhouse, 1879), **comb. n.**, *D. semicostatus* (Blackburn, 1891), **comb. n.**, *D. signatus* (Kleine, 1939), **comb. n.**, *D. typicus* (Kleine, 1939), **comb. n.**, aus der Gattung *Flabellotrichalus* Pic, 1921: *Diatrichalus vicarius* (Kleine, 1935), **comb. n.**, *D. puerilis* (Kleine, 1935), **comb. n.** und *D. salomonensis* (Kleine, 1933) **comb. n.**

Die folgenden Artnamen werden als jüngere, subjektive Synonyme betrachtet: *Trichalus nigricolor* Pic, 1927, **syn. n.**, *Trichalus niger* var. *notaticollis* Pic, 1927, **syn. n.**, *Trichalus niger* var. *angustatus* Pic, 1927, **syn. n.** und *Diatrichalus concolor* Kleine, 1927, **syn. n.** [alle von *D. niger* (Waterhouse, 1879)]; *Trichalus completus* Pic, 1923, **syn. n.** [= *Diatrichalus cerberus* (Bourgeois, 1900)].

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1. Introduction

The genus *Diatrichalus* was described by KLEINE (1926) for two New Guinean species: *D. xylobanoides* Kleine, 1926 and *D. cerberus* (Bourgeois, 1900). The species originally classified with it have only primary elytral costae connected with dense regular transverse costae. They were apparently distinguishable from the genus *Trichalus* Waterhouse, 1877, which was externally similar by the presence of one median areola on the pronotum and shortened first primary elytral costa. *Diatrichalus* was for a long time classified together with other lycid genera with shortened first elytral primary costa in the subfamily Trichalinae (KLEINE, 1928) or tribe Trichalini (KLEINE, 1933). This classification has not been questioned until recently (BOCÁK, 1998), although the status of the taxon Trichalini was lowered by BOCÁK & BOCÁKOVÁ (1990) to the subtribe. Both male and female genitalia and structure of mandibles showed that the genus *Diatrichalus* is much closer to the genera *Enylus*

Waterhouse, 1879 and *Prometaneus* Kleine, 1925 than to the remaining genera with shortened first primary elytral costa (BOCÁK, 1998). In the same paper the concept of this genus was widened and now both taxa with fully developed and missing secondary costae are classified in *Diatrichalus*. There are many transitional states between these two extremes of elytral structure and any trial to divide this very speciose group on the basis of the absence of primary elytral costae would be purely arbitrary. Most species of *Diatrichalus* until now were classified as *Trichalus* due to the external similarity with the latter. Although there are some minute differences in the shape of the pronotum, the robustness of the body, shape of palpi and general colour patterns between both genera, it is advisable to dissect either male or female genitalia for certain generic classification.

The aim of this paper is to revise all available *Diatrichalus* until now classified as *Trichalus* and related genera and to bring descriptions of new species collected recently in New Guinea and deposited in the State Museum of Natural History in Stuttgart and in the State Museum of Natural and Cultural Heritage in Honolulu.

Acronyms

The following acronyms indicate depositories for specimens used in this study:

- BMNH* = Natural History Museum, London (Mrs. J. BEARD, Mr. M. KERLEY);
- BPBM* = State Museum of Natural and Cultural History, Honolulu, Hawaii (Dr. SAMUELSON);
- KMTC* = collection of Mr. KIYOSHI MATSUDA, Takarazuka City;
- LMBC* = author's collection;
- MHNG* = Muséum d'Histoire naturelle, Genève (Dr. I. LÖBL);
- MSNG* = Museo civico di Storia naturale, "Giacomo Doria" Genova (Dr. R. POGGI);
- MHNB* = Naturhistorisches Museum, Basel (Dr. M. BRANCUCCI);
- MHNP* = Muséum National d'Histoire Naturelle, Paris (Dr. J. MÉNIER);
- MTMB* = Magyar Természettudományi Múzeum, Budapest (Dr. O. MERKL);
- NHMB* = Naturhistorisches Museum, Berlin (Dr. F. HIEKE, Dr. M. UHLIG);
- SMNS* = Staatliches Museum für Naturkunde, Stuttgart (Dr. W. SCHAWALLER);
- ZMPA* = Instytut Zoologii PAN, Warszawa (Mr. T. HUFLEJT, Dr. S. A. ŚLIPIŃSKI).

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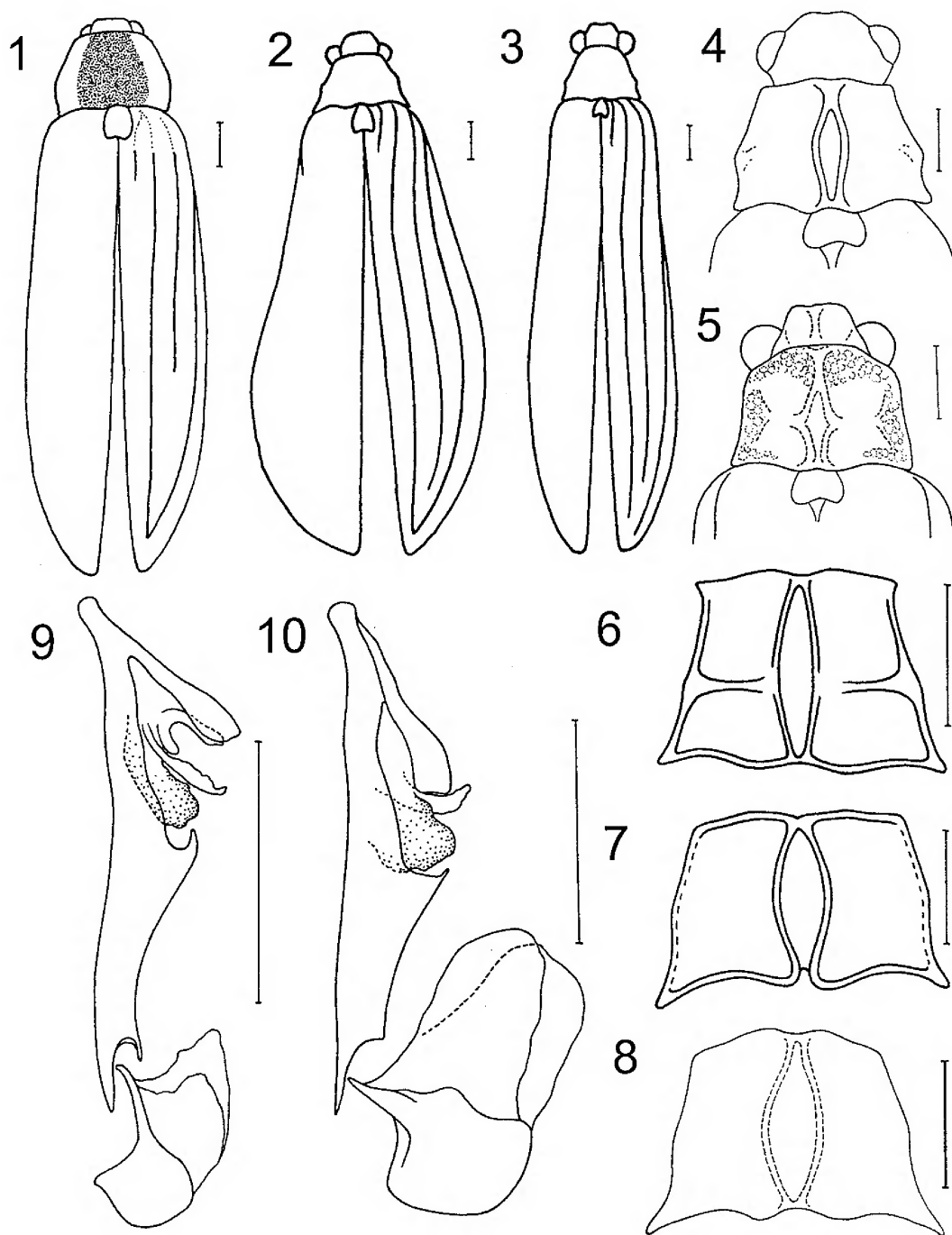
2. The genus *Diatrichalus* Kleine, 1926

Diatrichalus Kleine, 1926.

Type species: *Diatrichalus xylobanoides* Kleine, 1926 (KLEINE, 1926: 167) (by original designation).

Mimotrichalus Pic, 1930 (PIC, 1930); BOCÁK (1998: 193).

Type species: *Mimotrichalus tenimberensis* Pic, 1930 (PIC, 1930: 92).



Figs 1-10. *Diatrichalus* spp. - 1-3. General view. - 1. *D. rubricostatus* sp. n.; - 2. *D. metallicus* sp. n.; - 3. *D. aeneus* sp. n. - 4-8. Pronotum. - 4. *D. fasciatus* sp. n.; - 5. *D. xylobanoides*, - 6. *D. proprius* sp. n.; - 7. *D. cyanescens*; - 8. *D. tenimberensis*. - 9-10. Male genitalia. - 9. *D. habbema* sp. n.; - 10. *D. fenestratus* sp. n. - Scales: 0.5 mm.

Differential diagnosis: Pronotum with median lanceolate areola only, lateral carinae missing or very weak (Figs 4–8), elytra with shortened primary costa 1 (Figs 1–3), antennae of both sexes more or less acutely serrate, never with long lamellae (Figs 44–55), phallus stout, apical part projected, internal sac prolonged, more or less sclerotized (Figs 9–42), vaginal glands inserted laterally, spermatheca long, slim, rod-like.

Redescription: Body medium-sized, dorsoventrally flattened, coloration variable but considerable number of species mat black or black with metallic blue shine, rest of species with brightly coloured pronotum and basal part of elytra. Never light yellow. Head small, hypognathous, partly concealed by pronotum, cranium compact, without rostrum, gular sutures inconspicuous, distance of posterior tentorial pits bigger than the length of gula, posterior tentorial arms slim, eyes prominent, usually smaller than their frontal distance. Mouth parts well developed, mandibles stout, curved in right angle, more than twice as long as labrum, labrum wider than long, emarginate in distal part, lateral processes long, epipharynx large, with sparse setae, hypopharynx flat, lateral processes weak, apical part less sclerotized. Maxillae with small cardo (one fifth of stipes length), lacinia very reduced, only membrane and several setae present, galea well developed, membranous, with relatively dense setae, maxillary palpi with broad apical segment bearing papillae at apex; labium with robust praementum, postmentum very tiny, labial palpi with apical segment robust, widest at apex, with irregular unpigmented papillae at apical margin. Antennae strongly compressed, serrate in both sexes or shortly flabellate in males of some species. Pronotum usually wider than long, with one more or less broad longitudinal areola in the middle, lateral margins often elevated, basisternum trapezoidal, relatively broad. Mesosternum narrowly connected with metasternum, mesoscutellum slightly emarginate at apex. Postnotum without keel. Elytra flat, with four primary longitudinal costae at humeri, primary costa 1 considerably shortened, reaching at most one fourth of elytral length, remaining costae mostly reaching elytral apex, costa 3 sometimes shortened, costa 2 and 3 often fused before apex; secondary costae irregular to completely absent in some species, legs relatively strong and short, strongly compressed.

Male genitalia with relatively short and robust phallus, apical part ventrally projected, hiding apical opening, internal sac without pair of basal thorns, nearly always strongly sclerotized in apical part, phallobasal membrane sometimes extensive but never sclerotized. Ovipositor with slender, long valvifers, sometimes incompletely fused at base, vagina relatively short, basal part of glandular duct often robust, accessory glands inserted laterally. Spermaduct robust at base, spermatheca slender, very long.

Sexual dimorphism: I have not found any apparent sexual dimorphism in the genus *Diatrichalus*. The males are generally smaller and slimmer, as usual in all Lycidae. The difference in the eye size is slight in most species and I have not found any difference in the shape of antennae, which are serrate in both sexes.

Distribution and diversity within the genus: *Diatrichalus* is very widely distributed and its range includes Australia, Tasmania, New Guinea, Solomon Islands, Indonesia, Philippines and Malaysian Peninsula. This genus is very speciose in the studied area and until now 28 species are known from New Guinea and 13 species from all adjacent regions. New Guinea is the area with the highest diversity, much less species are known from Australia as well as from Wallacea and only sev-

eral species have been recorded from the Philippines (5 spp., BOČÁK, 1999) and from Great Sundas (1 sp., for synonymy see *D. niger* chapter 6.). The numbers of specimens representing each species in both large materials studied from the Museum of Natural and Cultural Heritage and the State Museum of Natural History in Stuttgart were generally low and therefore we can expect further species to be discovered in the studied area in the future. Similarly we can expect further species in Wallacea and Australia, whose fauna is poorly studied.

Relationships within the genus. Although the *Diatrichalus* fauna of New Guinea represents approximately half of the known diversity of the genus and we cannot expect substantial improvement of our knowledge of the diversity of this group, it is nearly impossible to propose a robust hypothesis about the phylogeny at the species level using only morphological characters. I have found only some groups of species but because of their weak support I have not used them in the classification. They would be defined first of all on the basis of the shape of the male genitalia and partly on the coloration. The known female genitalia which proved to be useful in other groups were uniform and the possibility of employing them was further lowered by the fact that females of many species are not known.

The first group comprises species with an open ventral part of the phallus (Figs 25–33). This character is considered to be primitive, because it is known from genera of the family Metriorrhynchinae, and therefore this group is supposed to be paraphyletic. It includes the group of dark coloured species without secondary costae (*D. biroi* and *D. emarginatus*), dark species with fully developed secondary costae (*D. schawalleri*) as well as brightly coloured species (*D. rubricostatus*, *D. pallidihumeralis*, *D. striatus*, *D. fasciatus*, *D. mancus*, *D. humeralis* and *D. bipunctatus*). Only two species with at least part of the body brightly coloured show a different type of the phallus: the isolated *D. secretus* with the simple, tube like basal part of the phallus and *D. sedlacekiae*, which has the same type of phallus as the following group. The bright coloration of the body seemed to be a synapomorphy, when a draft of a character matrix was run on Hennig86, but all species from the Philippines are brightly coloured and they belong to the next species group involving representatives with a ventral process of the phallus. The polarisation of bright coloration as a character supporting relationship in the genus would be therefore very ambiguous in a more complex analysis.

A second group comprises all species with a closed ventral part of the phallus and with a process approximately in the middle of the phallus length (Figs 9–16, 19–22, 35–42). Only two species from New Guinea from this group are not dark uniform; the brightly coloured *D. sedlacekiae* and light brown *D. habbema*, all remaining species are uniformly dark brown to black either with a blue, bronze or green metallic shine (*D. cyanescens*, *D. parallelus*, *D. proprius*, *D. dentatus* etc.) or without it (*D. cerberus*, *D. tenimberensis*, *D. piper*, *D. sinuaticollis*, *D. fenestratus*). The absence of secondary costae used earlier by KLEINE (1926) for proposing the genus *Diatrichalus* has been found in various groups when defined on the basis of male genitalia and it proved to be unsuitable for the classification. Moreover, there are many intermediate states between weak, irregular, secondary costae and their complete absence.

3. Species list

3.1. *Diatrichalus aeneus* sp. n. (Figs 3, 39, 48)

Type material: Holotype ♂, New Guinea NE, Mt. Kaindi, 2400 m, 27. I. 1963, light trap, leg. J. SEDLACEK (BPBM). – Paratypes: ♀, New Guinea: NE: Mt. Kaindi, 2350 m, 15. VI. 1971, ♀, 30. VIII. 1971; – ♀, Mt. Missim, 2400 m, 21. IV. 1968, leg. J. & M. SEDLACEK; – ♂, S. Garaina, 2000–2800 m, leg. J. SEDLACEK; – ♂, 30 km S of Garaina, 2000 m, 9. I. 1968, leg. J. & M. SEDLACEK; – ♂, Wau, Edie Ck, 2050–2300 m, leg. J. & M. SEDLACEK, 18. VIII. 1965, ♂, I. 1970; – ♂, N slope Mt. Strong, 2600–2800 m, 8.–10. I. 1968, leg. J. & M. SEDLACEK; – ♂, Bulldog Ra, 14 km S Edie Ck, 2400 m, 4.–10. VII. 1966, leg. O. R. WILKES; – ♂, W. Highlands, Yai-bos, 2150–2200 m, 10. VI. 1963, leg. J. SEDLACEK; – ♂, Tomba, slopes of Mt. Hagen, 2450 m, 23. V. 1963, leg. J. SEDLACEK; – 2 ♀♀, SE Mt. Giluwe, N side, Malgi, 2500 m, 25.–30. V. 1961, ♂, 6. VI. 1963 (BPBM, LMBC).

Name derivation: The species is named according to the metallic shine of its elytra.

Differential diagnosis: It differs from *D. metallicus* by more slender elytra (compare figs 2 and 3), the shape of aedeagus (Fig. 39) and by the metallic colour. The similar *D. fenestratus* has mat brown to black elytra and quadrate elytral cells.

Description: Body moderately big, slender, dark brown to black, elytra with bronze shine. Head small, with big eyes and prominent antennal tubercles, including eyes considerably wider than the frontal part of pronotum, apical maxillary segment broad, antennae slender, serrate (Fig. 48). Interocular distance 1.10–1.25 times longer than maximum eye diameter. Pronotum small, shining, covered with dense short pubescence, widest at base, 1.67 times wider than long at midline, tooth on each margin inconspicuous. Elytra slightly dilated posteriorly to parallel-sided (Fig. 3). Primary costae very robust, costa 2 and 4 reaching apex, costa 1 very short, costa 3 slightly shortened. Secondary costae weak. Male genitalia short, quite robust (Fig. 39).

Measurements: Length of body 7.6–10.6 mm, width at humeri 1.75–2.40 mm, length of pronotum 0.92 mm, width of pronotum 1.54 mm. ♂: interocular distance 0.58 mm, maximum diameter of eyes 0.51 mm.

Distribution: New Guinea, the locality data show the mountainous distribution of this species.

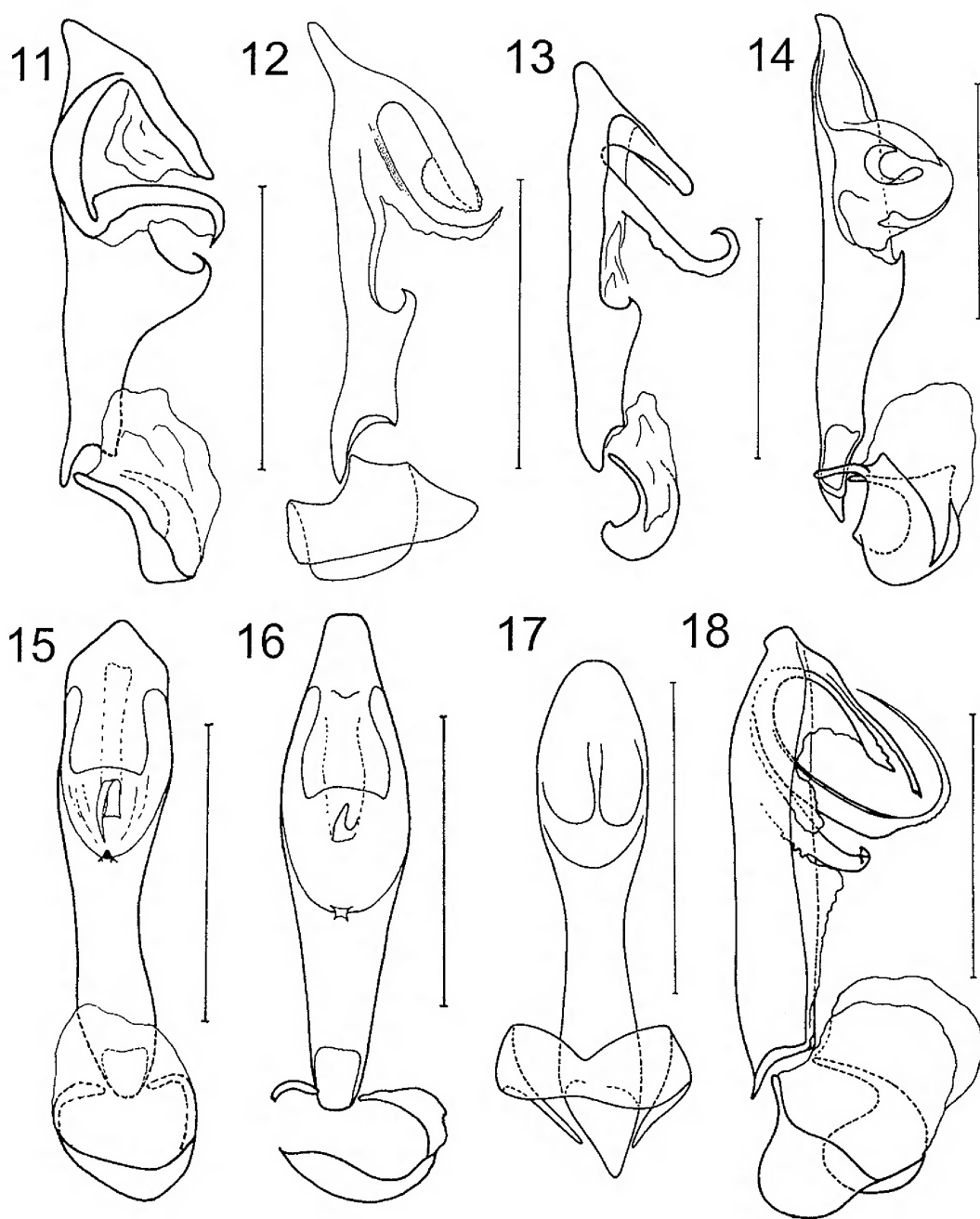
3.2. *Diatrichalus bipunctatus* sp. n. (Fig. 27)

Type material: Holotype ♂, Irian Jaya: Prov. Jayawijaya, Wamena, Pronggoli, 17.–19. IX. 1991, 2000–2400 m, leg. A. RIEDEL (SMNS).

Name derivation: *D. bipunctatus* is named according to two rounded yellowish white patches on dark elytra.

Differential diagnosis: It differs from other species of the genus in the unique elytra colour pattern. *D. aeneus*, similar in body shape, differs in coloration and in the shape of the male genitalia.

Description: ♂. Body medium sized, slender, slightly widened posteriorly, dark brown to black, on every elytron a yellowish white rounded patch. Head small, with quite small but hemispherically prominent eyes. Interocular distance 1.59 times longer than maximum eye diameter. Antennal tubercles apparent, followed by transverse depression, apical maxillary palpi segment broad, without apparent tubercles, antennae acutely serrate, longer than two thirds of elytral length. Pronotum small, widest at base, pronotum 1.62 wider than long at midline, posterior angles acutely



Figs 11–18. *Diatrichalus* spp., male genitalia. – 11. *D. cerberus*; – 12–13. *D. tenimberensis*; – 14. *D. sedlacekiae* sp. n.; – 15. *D. cerberus*; – 16. *D. tenimberensis*; – 17. *D. wauensis* sp. n.; – 18. *D. mancus*. – Scales: 0.5 mm.

projected, lateral margins elevated, with apparent projections at basal third, surface shining, densely pubescent. Elytra flat, with costa 1 reaching one fourth of the elytral length, primary costae 2–4 strong, costa 3 slightly shortened, secondary costae weak, transverse costae forming quadrate cells. Male genitalia robust, phallus opened ventrally (Fig. 27). ♀. Unknown.

Measurements: Length of body 8.7 mm, width at humeri 2.03 mm, length of pronotum 0.98 mm, width of pronotum 1.59 mm. ♂: interocular distance 0.65 mm, maximum diameter of eyes 0.41 mm.

Distribution: New Guinea, Wamena valley.

3.3. *Diatrichalus biroi* Kleine, 1943 (Fig. 25)

Diatrichalus biroi Kleine, 1943 (KLEINE, 1943: 152).

Type material: ♀, "N. Guinea, BIRÓ, 1900" (MTMB).

Other material examined: ♂, "Milne Bay" (MHNP), designated as a holotype of *T. subarcuatithorax* in PIC's collection; – ♂ ♀, New Guinea, NE, Busu R., E of Lae, 100 m, 13.–14. IX. 1955, J. L. GRESSITT; – ♂, New Guinea, NE, Wau Bulolo R., 850–900 m, 24. VIII. 1965, J. & M. SEDLACEK; – ♂, Wau, 1200–1300 m, 1.–9. IX. 1965, J. SEDLACEK; – ♂, New Guinea, NE, Ambunti, Sepik R., 50 m, 10. V. 1963, R. STRAATMAN; – ♂, New Guinea, Neth., Ifar, 300–600 m, 20. VI. 1959, T. C. MAA (BPBM, LMBC).

Differential diagnosis: *D. biroi* is the only species with missing secondary elytral cells and eyes larger than their interocular distance.

Redescription: ♂. Body medium sized, slightly widened posteriorly, dark brown to black. Head small, with deep depression behind antennal tubercles, surface shining, covered with brownish pubescence, eyes large, hemispherically prominent, maximum eye diameter 1.07 times longer than interocular distance, maxillary palpi with apparent tubercles at outer margin, antennae serrate. Pronotum transverse, 1.50 times wider than long at midline, with considerably elevated lateral margins, and less conspicuous lateral teeth, surface shining. Elytra with vestiges of secondary costae at humeri only, transverse cells dense, forming strongly transverse reticulate cells. Male genitalia with broad sclerotized internal sac (Fig. 25). ♀. Interocular distance 1.22 times longer than maximum eye diameter.

Measurements: Length of body 8.15–10.10 mm, width at humeri 1.96–2.70 mm, holotype: length of pronotum 1.50 mm, width of pronotum 2.25 mm. ♀: interocular distance 0.67 mm, maximum diameter of eyes 0.55 mm. ♂: interocular distance 0.51 mm, maximum diameter of eyes 0.54 mm.

Distribution: New Guinea, known mostly from lowland forests.

Remark: There is one male bearing a hand written label "*Trichalus subarcuatithorax* n. sp." in PIC's collection in Paris. I have not found any description of this species in the literature, and therefore I consider this name as unpublished.

3.4. *Diatrichalus cerberus* (Bourgeois, 1900) (Figs. 11, 15)

Trichalus cerberus Bourgeois, 1900 (BOURGEOIS, 1900: 429).

Diatrichalus cerberus (Bourgeois, 1900); KLEINE (1926: 167).

= *Trichalus completus* Pic, 1923 (PIC, 1923: 36), hors-texte – **syn. n.**

Type material: ♂, holotype of *D. cerberus*, "N. Guinea, Andai, XII., BECCARI 1875" (MSNG); – ♀, paratype of *D. cerberus*, Dorey, WALLACE (MHNP); – ♀, lectotype of *Trichalus completus* (hereby designated), "Humboldt Bay, Nlle Guinée" (MHNP); – ♀, paratype (hereby designated), same data (MHNP).

Other material examined: New Guinea: ♂, NE, Bulolo, 700 m, 6. XI. 1969, J. SEDLACEK; – ♂ ♀, Wau 12. IX.; ♂, Wau 1100 m, 26. X. 1961; ♂, ditto, 18. XII. 1961; – ♂, Wau, 1300–1500 m, 4. II. 1968; – ♂, Wau, Big Wau Ck., 1200 m, IX. 1963; – ♂, NE, Kuper Ra, 25 km SE Salamaua, 25.–28. I. 1969; – ♂, NE, Karimui, 1080 m, 14.–15. VII. 1963, J. SEDLACEK; – ♂ Papua, Fly River, Kiunga 30 m, VIII. 1969; – 2 ♂ ♂, NW, Nabire, S Geelvink Bay,

5–50 m, 25. VIII.–7. IX. 1962, leg. J. SEDLACEK; ♂, ditto, 2–9. VII. 1962, J. L. GRESSITT Coll. (BPBM, LMBC).

Differential diagnosis: *D. cerberus* differs from other brownish black *Diatrichalus* from New Guinea by the specific shape of the male genitalia (Figs 11, 15).

Redescription: ♂. Body medium sized, parallel-sided, dark brown to black. Head small, with prominent antennal tubercles, eyes smaller, interocular distance 1.38 times longer than the maximum eye diameter, surface of cranium mat, with fine microstructure, sparsely pubescent. Maxillary palpi robust, apical segment wide, with small tubercles at outer margin. Pronotum small, strongly transverse, 1.71 times wider than long at midline, widest at base, lateral margins considerably elevated, median areola wide. Elytra with four primary costae, costa 1 reaching one quarter of elytral length, remaining costae equal in strength, only costa 3 very slightly shortened, secondary costae present at humeri only, missing further, transverse costae very dense, consequently elytral cells strongly transverse. Male genitalia with laterally compressed phallus and stout ventral process (Figs 11, 15).

Measurements: Length of body 7.6 mm, width at humeri 2.12 mm, length of pronotum 0.90 mm, width of pronotum 1.54 mm. ♂: interocular distance 0.59 mm, maximum diameter of eyes 0.43 mm.

Distribution: Widespread on New Guinea.

Remark: Based on the study of type material I propose *Trichalus completus* to be a junior subjective synonym of *D. cerberus*.

3.5. *Diatrichalus cyanescens* (Bourgeois, 1900), **comb. n.** (Figs 7, 35–37, 43, 54)

Trichalus cyanescens Bourgeois, 1900 (BOURGEOIS, 1900: 422).

Type material: ♀, holotype, "Isole, Aru, Wokan, O. BECCARI 1873" (MSNG).

Other material examined: New Guinea: ♂, Neth., Kulima, 1400 m, 19.–22. II. 1960, T. C. MAA; – ♂, Papua, Fly R., Kiunga, 35 m, VIII. 1969, J. & M. SEDLACEK Coll.; – ♂, SE, Mt. Lamington, 500 m, VI. 1966, P. Shanahan; Papua, Owen Stanley Range, Goilala: Loloipa, 1.–15. II. 1958, W. W. BRANDT; – ♂, NE, Garaina, 800 m, 15. I. 1968; – ♂, W. Central Mts., Archibold Lake, 760 m, 26. XI.–3. XII. 1961, S. QUATE; – ♂, NE Wau, 1200–1500 m, 30. VIII. 1965, J. SEDLACEK; – ♂, Wau, 1200 m, 2. XI. 1969, M. SEDLACEK; – ♂, Japan Island, SSE Sumbarbaba, Dawai R., 1. XI. 1962; – 2 ♂ ♂, New Guinea NE, Goroka, 1550 m, 25. VI. 1955, leg. J. L. GRESSITT; – ♂, 19. VI. 1955; – ♂, NE New Guinea: Kassem Pass, 1460 m, 18. VI. 1963, leg. J. SEDLACEK; – ♂, Goroka-Kalebe, 1800 m, 24. VI. 1955, leg. J. L. GRESSITT; – ♂, Garaina, 830 m, 13.–15. I. 1968, leg. J. & M. SEDLACEK; – ♂, Finisterre Ra, Saidor, Matoko Vill., 6.–24. IX. 1958, leg. W. W. BRANDT; – ♂, Kokoda, 28.–29. III. 1956, leg. J. L. GRESSITT; – ♂, Bulolo, 750 m, 5. X. 1965, leg. J. SEDLACEK; – ♂, 30 km S of Kainantu, 4. X. 1959, ♂, 1.–10. V. 1963, ♂ ♀, 22. IX. 1971, ♂, 22. X. 1961, ♂, X. 1968, ♂, 13. X. 1965; – ♂, Wau, 1100–2200 m, 28. VI. 1971, ♂, 30. IX. 1965, leg. J. SEDLACEK; – 2 ♂ ♂, Wau, Kunai Ck, 1230 m, 28. V. 1965, leg. J. & M. SEDLACEK; – ♂, Wau, Big Wau Ck, 1200 m, IX. 1965, leg. P. SHANAHAN; – ♂, Bayer R., 20. VIII. 1971, leg. J. SEDLACEK; – ♂, Akvitana R., nr Aiyura, 1550 m, 10. I. 1965, J. L. GRESSITT; – 3 ♂ ♂, New Guinea NE, Goroka, 1550 m, 25. VI. 1955, leg. J. L. GRESSITT; – ♂, Mt. Missim, 1600–2000 m, 21.–24. IX. 1964, leg. M. SEDLACEK; – ♂, Watut R., X. 1969, 900–1300 m, leg. A. B. MIRZA; – ♂, Wau, 1090 m, 25. I. 1963, leg. J. SEDLACEK; – ♂, Wau, 1100–1200 m, 6. X. 1965, ♂, 19. IX. 1964, ♂ ♀, 9. X. (BPBM, LMBC).

Differential diagnosis: *D. cyanescens* differs from other *Diatrichalus* by the metallic shine of the elytra, in the eyes bigger than their interocular distance and the shape of the male genitalia (Figs 35–37).

Redescription: ♂. Body medium sized, robust, parallel-sided, dark brown to black, elytra and slightly also pronotum with blue shine. Head small, with apparent antennal tubercles, their surface shining but very finely punctuated (visible at 90x magnification), sparsely pubescent, eyes big, hemispherically prominent, maximum eye diameter 1.02 times longer than interocular distance. Antennae serrate, maxillary palpi robust, apical segment with numerous tubercles at the outer margin. Pronotum small, widest at base, strongly transverse, 1.60 times wider than long at midline, posterior angles rectangular, with shortly projected distal part, lateral margins without lateral projections, frontal margins widely rounded, median areola wide (Fig. 7). Elytra flat, with primary costa 1 reaching one fifth of elytral length, costa 3 only slightly weaker in the apical part, secondary costae much weaker, even slightly weaker than transverse costae, transverse costae dense, elytral cells in average slightly wider than long. Male genitalia as in figs 35–37.

Measurements: Length of body 6.8–9.8 mm, width at humeri 1.50–2.15 mm, length of pronotum 0.92–0.97 mm, width of pronotum 1.62–1.68 mm. ♂: interocular distance 0.53 mm, maximum diameter of eyes 0.52 mm.

Variability: *D. cyanescens* is variable in many characters by the shape of antennae, pronotum and male genitalia (Figs 35–37). Although the examined series from different localities were quite extensive I have not found any population characterised at least by some minute character and there are many transition states between extreme expression of all above mentioned characters. Therefore I consider here all specimens as members of one species.

Distribution: Widespread species, common on New Guinea, Aru and Japan Islands.

3.6. *Diatrichalus dentatus* (Kleine, 1926), **comb. n.** (Fig 21, 50)

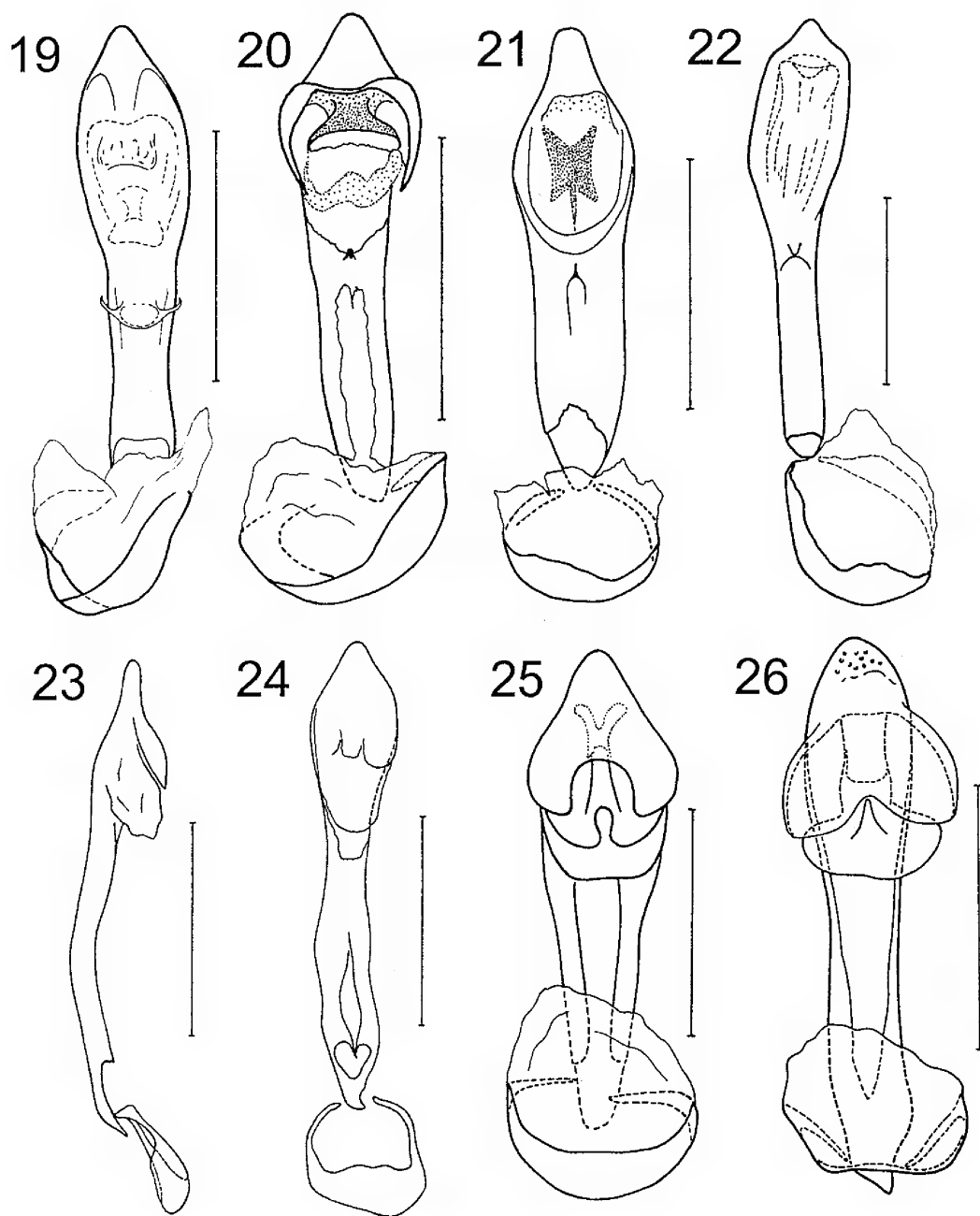
Trichalus dentatus Kleine, 1926 (KLEINE, 1926: 170).

Type material: ♀, type, “Z. Nieuw. Guinea, LORENTZ 1909–10, Bivak Eiland I. 10” (ZMAN).

Other material examined: 3 ♂♂, New Guinea NW, Wisselmeren, Moanemani, Kamo V., 1500 m, 13. VII. 1962, leg. J. SEDLACEK; – ♂, Wisselmeren, Enarotali, 1750–1900 m, 12. VIII. 1962, ♂, 28. VII. 1962, ♂, 5. VIII. 1956, ♂, 16. VII. 1962; – 2 ♂♂, Kamo Debei div., 1700 m, 13. VIII. 1962, leg. J. SEDLACEK; – ♂, Obano, 1770 m, 9. VIII. 1955, leg. J. L. GRESSITT; – ♂, Itouda, Kamo V., 1500 m, 17. VIII. 1962; – ♂, Enarotali (without other data); – ♂, NE Feramin, leg. W. W. BRANDT, 1.–6. VI. 1959, ♂, 23.–31. V. 1959; – 2 ♂♂, Karimui, 1080 m, 14.–15. VII. 1963, leg. J. SEDLACEK; – ♂, Kokoda, 28.–29. III. 1956, leg. J. L. GRESSITT; – ♂, Finisterre Ra, Saindor, Kiambavi Vill., 22.–29. III. 1958, leg. W. W. BRANDT; – ♂, Eliptamin Valley, 1200–1500 m, 1.–15. VII. 1959, leg. W. W. BRANDT; – ♂, Mindik, 1200–1600 m, IX. 1968, leg. N. L. H. KRAUS (BPBM, LMBC); – ♂, Irian Jaya, Baliemtal, Jiwika, 1700–2300 m, 1.–2. IX. 1990, leg. A. RIEDEL; – ♂ ♀, Irian Jaya, Wamena, Kangime, 1200–2200 m, 4. IX. 1990, leg. A. RIEDEL; – ♀, Irian Jaya, Manokwari, Ransiki Mayuby/Banyas, 27.–28. IX. 1990, leg. A. RIEDEL (SMNS).

Differential diagnosis: It differs from other species by dark brown body and blue metallic shine and in having small eyes. It is very near by general appearance to *D. cyanescens* from which it differs additionally by the eyes size in the presence of a projection at basal third of lateral pronotal margin and more acutely projected pronotal hind angles.

Redescription: ♂. Body medium sized, slightly widened posteriorly, dark brown to black, with blue or green metallic shine especially on the elytra. Head



Figs 19–26. *Diatrichalus* spp., male genitalia. – 19. *D. proprius* sp. n.; – 20. *D. piper* sp. n.; – 21. *D. cyanescens*; – 22. *D. metallicus* sp. n.; – 23–24. *D. xylobanoides*; – 25. *D. biroi* sp. n.; – 26. *D. schawalleri* sp. n. – Scales: 0.5 mm.

small, with apparent antennal tubercles followed by transverse depression, eyes relatively small, interocular distance 1.44 times longer than maximum eye diameter, apical segment of maxillary palpi with numerous tiny tubercles, antennae slender, acutely serrate (Fig. 50). Pronotum transverse, pronotum 1.50 times wider than long at midline, basal angles acutely projected, tubercles at the basal third of lateral mar-

gin conspicuous. Elytra with both primary and secondary costae, costa 1 reaching basal fifth only, costa 3 slightly shortened, secondary costae very weak, sometimes weaker than transverse costae, elytral cells quadrate to slightly transverse. Male genitalia robust, phallus approximately parallel-sided (Fig. 21). ♀: interocular distance 1.59 times longer than maximum eye diameter, antennae robust, serrate.

Measurements: Length of body 6.3–9.0 mm, width at humeri 1.5–2.0 mm, length of pronotum 0.93 mm, width of pronotum 1.43 mm. ♂: interocular distance 0.65 mm, maximum diameter of eyes 0.45 mm.

Distribution: *D. dentatus* is widespread on New Guinea and it is one of the commonest *Diatrichalus* species in the area. According to the locality data this species occurs preferably in the elevations 1000–2000 m above sea level.

Variability: *D. dentatus* is variable by the colour of the metallic shine, the degree of expression of lateral projections of the pronotum and in the shape of the elytra.

Remarks: The holotype is a female and it is difficult to connect this specimen with series collected later. Although KLEINE (1926) based his description of *D. dentatus* exclusively on the shape of the pronotum, this specimen has a damaged pronotum. Nevertheless, it is apparent that posterior angles are considerably prominent and that there was a projection present in basal part of lateral margins. The holotype has transverse costae irregular but dense and therefore elytral cells are apparently transverse. I have only one specimen in the available material which has similarly transverse reticulate cells, other specimens expressing less dense arrangement of transverse costae. The more projected posterior angles, although not so considerable as in the holotype, and the presence of lateral projection are generally present in the series assigned here to *D. dentatus*. Based on the given similarity I have identified the series of blue *Diatrichalus* with smaller male eyes and male genitalia as in Fig. 21 as *D. dentatus*.

3.7. *Diatrichalus dilatatus* sp. n. (Figs 41–42)

Type material: Holotype ♂, Irian Jaya, PNG, Wau, Mt. Kaindi, 1650 m, 7. X. 1992, leg. A. RIEDEL (SMNS). – Paratypes: ♂, New Guinea, NE, W Highlands, Yaibos, 2150–2200 m, 10. VI. 1963; – ♂ New Guinea, NE, Wau, I. 1970, J. SEDLACEK; – ♂, 24–32 km SE Wau, 1500–1900 m, 20. III. 1962, J. SEDLACEK; – ♂, Morobe distr., Saureli-Arabuka, 1500–1800 m, 6. I. 1968, J. SEDLACEK; – ♂, Mt. Hagen area, 1650 m, 27. VI. 1957, D. ELMO HARDY; – ♂, Ion-gai, 10 km E of Mt. Albert Edward, 1450–1800 m, 8.–10. XI. 1965; – ♂, Kepilam, 2420–2540 m, 21. VI. 1963; – 2 ♂♂, New Guinea SE, Mt. Giluwe, 2500 m, 6. VI. 1963 (BPBM, LMBC); – 2 ♂♂ 2 ♀♀, Irian Jaya: Prov. Jayawijaya, Djuremma, 9.–11. IX. 1992, 1900–2100 m, leg. A. RIEDEL; – ♂, Irian Jaya, Jayawijaya, Ejpomek, 1800–2300 m, 5. IX. 1992, leg. A. RIEDEL; – ♂, Irian Jaya, Jayawijaya, N Bime, 2000–2070 m, 21. IX. 1993, leg. A. RIEDEL (SMNS, LMBC).

Name derivation: This species is named according to the posteriorly widened elytra.

Differential diagnosis: It differs from other species by metallic shine, by the shape of male genitalia and posteriorly widened elytra. It differs externally similar *D. metallicus* substantially in the shape of the male genitalia.

Description: ♂. Body medium sized, apparently widened posteriorly, elytra widest in the apical third to quarter of their length, black, dorsally with intensive, metallic shine. Head small, with large, hemispherically prominent eyes, interocular distance as long as maximum eye diameter, antennal tubercles well developed, rather

flat, followed by deep transverse depression, head surface lightly shining, with fine microstructure, densely covered with black pubescence, maxillary palpi robust, with numerous, tiny tubercles at the apical margin, antennae slender, serrate. Pronotum transverse. 1.5 times wider than long at midline, with only lightly elevated lateral margins, shining, covered with dense, short, black pubescence. Elytra with primary costae 2–4 stout, costa 3 only slightly shorter and weaker in apical part, secondary costae very weak to missing in some intercostal intervals. Transverse costae very irregular, often forming Y-shaped patterns when connecting near the opposite costae, reticulate cells irregular in shape. Male genitalia rather slender, slightly constricted in middle (Figs 41, 42)

Measurements: Length of body 9.3 mm, width at humeri 2.06 mm, length of pronotum 1.00 mm, width of pronotum 1.51 mm. ♂: interocular distance 0.61 mm, maximum diameter of eyes 0.61 mm.

Distribution: New Guinea, widespread but not common species.

3.8. *Diatrichalus emarginatus* sp. n. (Figs 33, 45)

Type material: Holotype ♂, New Guinea: NE, Feramin, 150–120 m, 23.–31. V. 1959, leg. W. W. BRANDT (BPBM). – Paratypes: 3 ♂♂, 1 ♀, same data as holotype (BPBM, LMBC).

Name derivation: This species is named according to the deeply emarginate basal part of the sclerotized structure of internal sac.

Differential diagnosis: *D. emarginatus* differs from other blue metallic species by the shape of the aedeagus (Fig. 33), absence of secondary elytral costae in most of the elytra and the size of male eyes.

Description: ♂. Body small, slightly widened posteriorly, dark brown to black, elytra with apparent metallic blue shine. Head small, with prominent antennal tubercles followed by deep transverse depression, surface of cranium shining, covered with sparse pubescence, eyes hemispherically prominent, interocular distance 1.29 times longer than maximum eye diameter, apical segment of maxillary palpi with tiny, numerous tubercles, antennae slender, individual segments nearly parallel-sided (Fig. 45). Pronotum transverse, 1.67 times wider than long at midline, with acutely projected hind margins and well marked anterior ones, projections at lateral margins apparent. Elytra with primary costa 1 reaching one fifth of elytral length, costa 3 shortened and weaker in apical quarter, secondary costae present at humeri only, elytral cells are apparently transverse. Male genitalia with very wide and emerginate plate in the apical part of the male genitalia (Fig. 33).

Measurements: Length of body 6.10 mm, width at humeri 1.45 mm, length of pronotum 0.67 mm, width of pronotum 1.12 mm. ♂: interocular distance 0.44 mm, maximum diameter of eyes 0.34 mm.

Distribution: New Guinea, known from the type locality only.

3.9. *Diatrichalus fasciatus* sp. n. (Figs 4, 29)

Type material: Holotype ♂, Irian Jaya: Baliem Pass, 1900 m, 15.–16. IX. 1990, leg. A. RIEDEL (SMNS).

Name derivation: Named according to the light transverse bands on the elytra.

Differential diagnosis: *D. fasciatus* is the only species in this genus with two light bands on the elytra. It resembles by the size of male eyes and in general ap-

pearance. *D. bipunctatus* from which it differs not only in the coloration but also in the more slender phallus.

Description: ♂. Body medium sized, very slightly widened posteriorly, dark brown to black, only humeral third and transverse band before elytral apex light ochre yellow. Head small, with smaller, but prominent eyes, interocular distance 1.71 times longer than maximum eye diameter, surface of cranium shining with quite dense short, light brownish pubescence. Maxillary palpi robust, apical segment with two tubercles only. Pronotum transverse, 1.50 times wider than long at midline, flat, lateral margins only slightly elevated, posterior angles acute, with short lateral projections (Fig. 4). Elytra with apparently shortened third primary costa, secondary costae very weak, weaker than transverse ones, sometimes missing or inconspicuous, elytral cells quadrate in average. Male genitalia as in fig. 29. ♀: unknown.

Measurements: Length of body 8.95 mm, width at humeri 2.06 mm, length of pronotum 1.08 mm, width of pronotum 1.60 mm. ♂: interocular distance 0.66 mm, maximum diameter of eyes 0.39 mm.

Distribution: New Guinea; known only from the type locality.

3.10. *Diatrichalus fenestratus* sp. n. (Figs 10, 55)

Type material: Holotype ♂, Irian Jaya: Jayawijaya, between Theila and Lake Habbema, 2800–2950 m, 22. X. 1993, leg. A. RIEDEL (SMNS).

Name derivation: *D. fenestratus* is named according to the prevalent rectangular shape of elytral cells.

Differential diagnosis: *D. fenestratus* resembles *D. aeneus* by the body shape but it is mat dark brown, without any metallic shine and has mostly quadrate elytral cells.

Description: ♂. Body medium sized, slender, dark brown to black, without metallic shine. Head small, antennal tubercles flat, eyes hemispherically prominent, interocular distance 1.27 times longer than the maximum eye diameter. Antennae serrate, apparently compressed, segment three nearly parallel-sided, following segments gradually more acutely serrate (Fig. 55). Pronotum small, widest at base, flat, considerably narrowed anteriorly, 1.5 times wider than long at midline. Elytra flat, slightly widened posteriorly, primary costa 1 shorter than one tenth of elytral length, primary costa 3 considerably shortened, reaching three quarters of elytral length, secondary costae irregular, often interrupted and missing in some parts of elytral intervals, transverse costae irregular, elytral cells variable in shape, mostly quadrate. Male genitalia with tubular base and ventral process (Fig. 10). ♀: unknown.

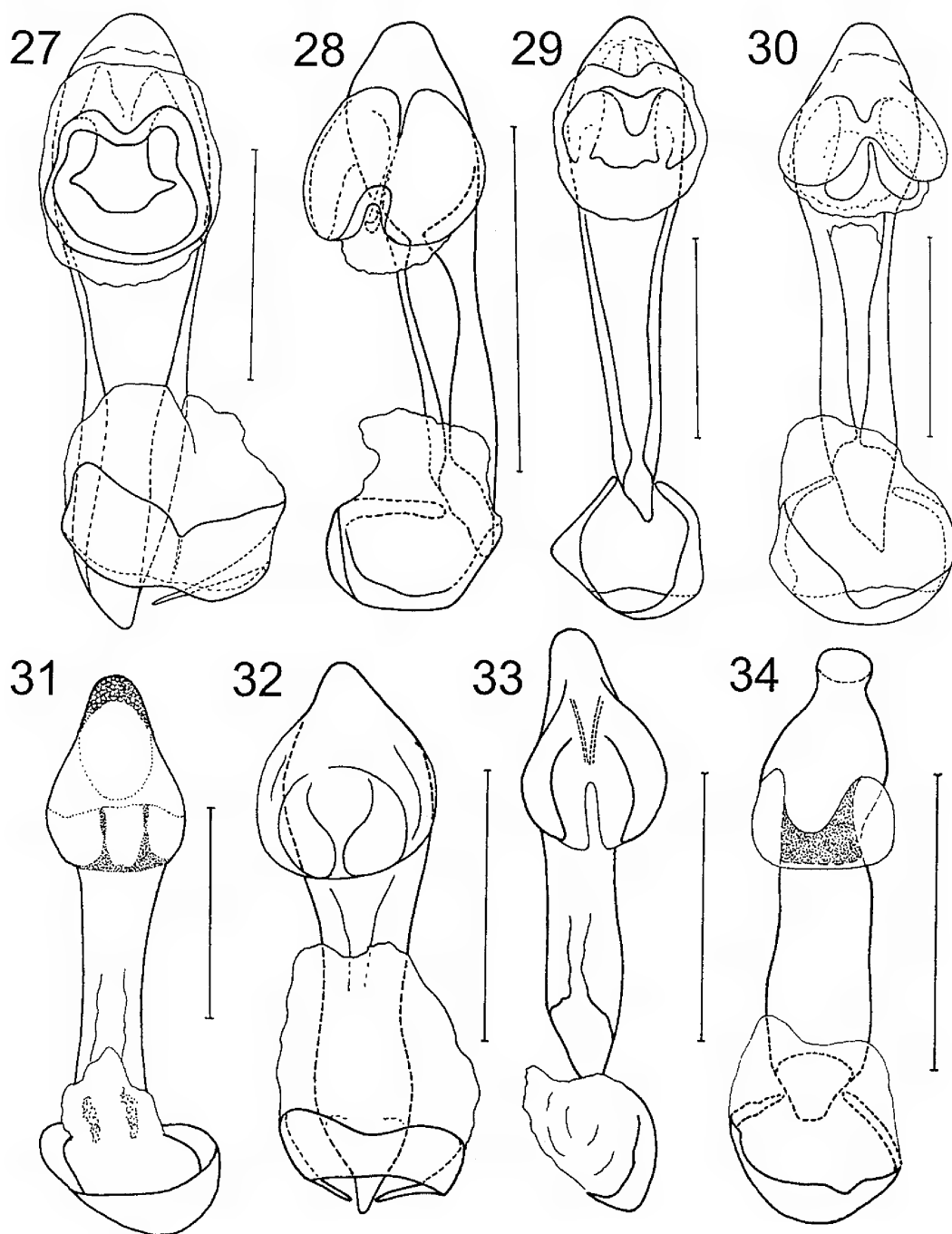
Measurements: Length of body 9.0 mm, width at humeri 1.64 mm, length of pronotum 0.85 mm, width of pronotum 1.27 mm. ♂: interocular distance 0.52 mm, maximum diameter of eyes 0.41 mm.

Distribution: New Guinea, known only from the type locality.

3.11. *Diatrichalus habbema* sp. n. (Figs 9, 49)

Type material: Holotype ♂, Irian Jaya: Jayawijaya, Pass Lake Habbema/Wamena Valley, 19.–20. X. 1993, leg. A. RIEDEL, 3450 m (SMNS). – Paratype: ♂, same locality data (SMNS).

Name derivation: Named according to the type locality.



Figs 27–34. *Diatrichalus* spp., male genitalia. – 27. *D. bipunctatus* sp. n.; – 28. *D. striatus* sp. n.; – 29. *D. fasciatus* sp. n.; – 30. *D. humeralis* sp. n.; – 31. *D. rubricostatus* sp. n.; – 32. *D. pallidihumeralis* sp. n.; – 33. *D. emarginatus* sp. n.; – 34. *D. secretus*. – Scales: 0.5 mm.

Differential diagnosis: *D. habbema* is distinguishable from all known species of *Diatrichalus* in New Guinea by dark ochre coloration of the elytra. The shape of the male genitalia shows a relationship with *D. sedlacekiae* and other species with a ventral process of phallus.

Description: ♂. Medium sized, body dark brown to black, pronotum with dark ochre lateral margins and darker disc, elytra dark ochre. Head and pronotum with light brown pubescence. Head small, antennal tubercles flat, eyes hemispherically prominent, interocular distance 1.05–1.14 times longer than the maximum eye diameter, antennae slender, acutely serrate, apparently compressed (Fig. 49). Pronotum small, widest at base, 1.4–1.5 times wider than long at midline, lateral margins with flat but apparent tubercles, posterior angles acutely projected, disc shining. Elytra slightly widened posteriorly, primary costa 1 shorter than one sixth of elytral length, primary costa 3 apparently shortened, secondary costae weak, transverse costae irregular, forming quadrate to longitudinal elytral cells. Male genitalia tubular at the base, with apparent ventral process (Fig. 9). ♀: unknown.

Measurements: Length of body 6.60–7.55 mm, width at humeri 1.40–1.54 mm, length of pronotum 0.70–0.75 mm, width of pronotum 1.07–1.09 mm. ♂: interocular distance 0.31 mm, maximum diameter of eyes 0.35 mm.

Distribution: New Guinea, known only from the type locality.

3.12. *Diatrichalus humeralis* sp. n. (Fig. 30)

Type material: Holotype ♂, New Guinea: NE. Wau, 1750–1900 m, leg. J. & M. SEDLACEK (BPBM).

Name derivation: Named according to the light brown coloration of humeri.

Differential diagnosis: *D. humeralis* and *D. sedlacekiae* are the only New Guinean species of this genus with brown body and yellowish white humeral two fifths of the elytra but they differ by the shape of the male genitalia (Figs 14, 30), relative size of eyes and other characters. The shape of male genitalia shows some relationship of *D. humeralis* to *D. fasciatus* and *D. bipunctatus*.

Description: ♂. Body medium sized, slightly widened posteriorly, brown, only elytra with humeral two fifths yellowish white. Head small, with large, hemispherically prominent eyes, maximum eye diameter 1.06 times longer than interocular distance, antennal tubercles prominent, followed with deep transverse depression, surface of head shining, covered with dense brownish pubescence. Maxillary palpi with robust tubercles at outer margin, antennae serrate. Pronotum transverse, widest at base, 1.50 times wider than long at midline, lateral margins elevated, with small tooth at basal third, surface densely pubescent, shining. Elytra with stout primary costae, costa 1 reaching one fifth of elytral length, costa 3 shortened apically, secondary costae very weak, shape of elytral cell variable, in average quadrate. Male genitalia as in fig. 30. ♀: unknown.

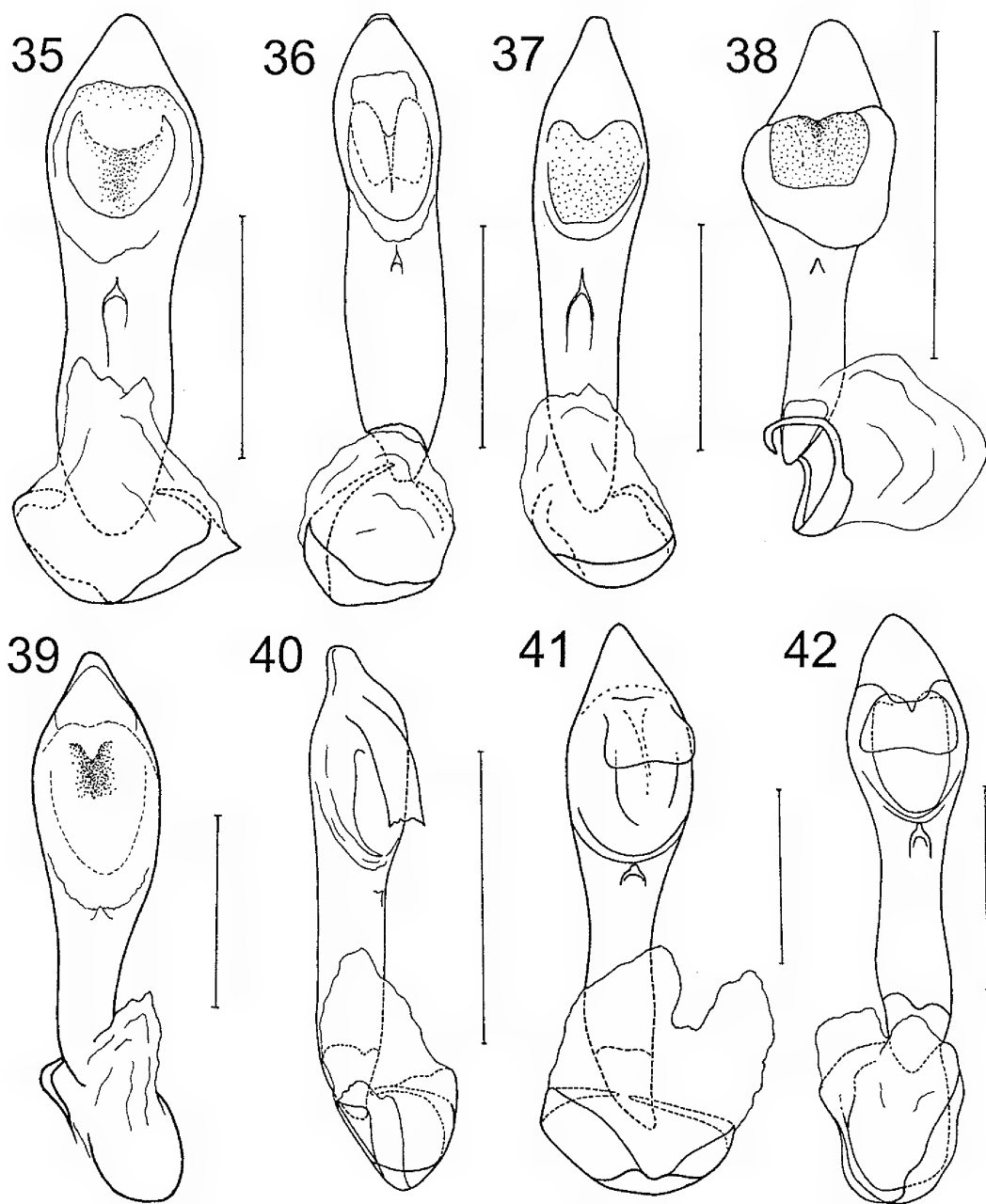
Measurements: Length of body 9.6 mm, width at humeri 2.1 mm, length of pronotum 1.01 mm, width of pronotum 1.51 mm. ♂: interocular distance 0.73 mm, maximum diameter of eyes 0.78 mm.

Distribution: New Guinea, known from the type locality only.

3.13. *Diatrichalus mancus* (Kleine, 1926), **comb. n.** (Fig. 18)

Trichalus mancus Kleine, 1926 (KLEINE, 1926: 176).

Type material: Holotype ♀, "Nieuw. Guinea, Expeditie 1904/5, Etna-baai" (ZMPA, type No. 929). – Paratypes: ♂ ♀, same data as holotype: – ♂; Nieuw. Guinea, Merauke, Dr. KOCH, 1904–5 (ZMPA).



Figs 35–42. *Diatrichalus* spp., male genitalia. – 35–37. *D. cyanescens*; – 38. *D. parallelus* sp. n.; – 39. *D. aeneus* sp. n.; – 40. *D. sinuaticollis* sp. n.; – 41–42. *D. dilatatus* sp. n. – Scales: 0.5 mm.

Differential diagnosis: *D. mancus* differs from remaining New Guinean species of *Diatrichalus* by the unique colour pattern. The combination of yellow dorsal part of the body with black apex of the elytra is often encountered in Australian representatives of the genera *Trichalus* and *Microtrichalus*, but it is not frequent in New Guinea.

Redescription: ♂. Body medium sized to moderately large, slightly widened posteriorly, yellow, only antennae, palpi, tarsi, apical third of elytra and some parts of cranium brown. Head small, with rather small eyes, their interocular distance 1.71 times longer than maximum diameter, antennal tubercles apparent, head surface shining, densely pubescent, maxillary palpi with short tubercles at outer margin of spical segment, antennae acutely serrate, pronotum considerably transverse, 1.92 wider than long at midline, lateral tooth present, elytra with stout primary costae, costa 3 shortened, secondary costae as strong as transverse ones, transverse costae dense, reticulate cells transverse. Male genitalia as in fig. 18.

Measurements: Length of body 11.1 mm, width at humeri 2.88 mm, length of pronotum 1.32 mm, width of pronotum 2.54 mm. ♂: interocular distance 0.66 mm, maximum diameter of eyes 0.39 mm.

Distribution: Southern New Guinea.

3.14. *Diatrichalus metallicus* (Kleine, 1935), **comb. n.** (Figs 2, 22)

Trichalus metallicus Kleine, 1935 (KLEINE, 1935a: 151)

Type material: Holotype ♀, "Edie Crik, Brit. N. Guinea, 7000 Fuss" (BMNH).

Other material examined: New Guinea, NE: 2.0 mm, Daulo Pass, 2400 m, Asaro-Chimbu div., 15. VII. 1955 J. L. GRESSITT, 7. VII. 1963 J. SEDLACEK; – ♂, Iongai, 10 km E of Mt. Albert Edward, 1800–1850 m, 8.–10. XI. 1965; – ♂, 3 ♀♀, Purosa, 20–26 km SE Okapa, 1800–2020 m, 28. VIII. 1964, J. & M. SEDLACEK; – ♂, Kegsugl, nr. Mt. Wilhelm, 2500–2820 m, 1. VII. 1963, J. SEDLACEK, ♂, Daulo Pass; – ♀, Ialibu, GRESSITT-MAA; – ♂ ♀, Mt. Kaindi, 2350 m, 7. V. 1968, J. L. GRESSITT; – ♀, Wau, 1750 m, 20. IX. 1965; – ♀, Morobe distr., Lake Trist, 1600 m, 21.–22. XI. 1966; – ♀, Wau, Big Wau Ck., 1200 m, XII. 1965; – ♂, Wau, Mt. Kaindi, 7. X. 1992, A. RIEDEL; – ♂, Mt. Giluwe, 2500 m, 6. VI. 1963, J. SEDLACEK; – ♂, Main Finisterre Range, near Freyberg Pass, 2550 m, 1.–21. X. 1958, W. W. BRANDT; – ♀, Papua, S. Highlands, Dimifa, SE of Mt. Giluwe, 2200 m, 10. X. 1958, J. L. GRESSITT; – ♂, S. Highlands, N of Mendi, 1800 m, 8. X. 1958, J. L. GRESSITT; – ♀, New Guinea, Telefomin, III. 1971; – ♀, N. SE Guinea, 8 km W Menai, 2150 m, 5.–12. XII. 1967, P. COLMAN; – 2 ♂♂ ♀ Irian Jaya, Prov. Jayawijaya, Bommela, 1. IX. 1992, 1750–2100 m, A. RIEDEL (BPBM, SMNS, LMBC).

Redescription: ♂. Body moderately large, apparently widened posteriorly, dark brown to black, with distinct blue or green metallic shine. Head small, eyes small, interocular distance 1.35 times longer than maximum eye diameter, antennal tubercles apparent, head surface mat, light pubescent, apical segments outer margin of maxillary palpi with several robust tubercles, antennae serrate. Pronotum transverse, 1.64 times wider than long at midline, with distinct tooth on each lateral margin, surface shining, pubescent. Elytra broad, distinctly dilated to apical half (Fig. 2), costae 2 and 3 strong, costa 2 apparently weaker in apical fourth, reticulate cells mostly transverse, often irregular. Male genitalia with slender phallus (Fig. 22).

Measurements: Length of body 7.2–9.5 mm, width at humeri 1.85–2.25 mm, length of pronotum 1.00 mm, width of pronotum 1.64 mm. ♂: interocular distance 0.58 mm, maximum diameter of eyes 0.44 mm.

Distribution: Widely distributed and quite common in high mountains of New Guinea.

3.15. *Diatrichalus pallidihumeralis* **sp. n.** (Figs 32, 52)

Type material: Holotype ♂, New Guinea: Papua, Brown Range, 20 km N Port Moresby, 27. IV. 1960, leg. C. W. O'BRIEN (BPBM).

Name derivation: Named according to the light humeral part of elytra.

Differential diagnosis: *D. pallidihumeralis* is very closely related to *D. rubricostatus* which is very similar in the general appearance and the type of aedeagus, but it is distinguishable easily by the longer primary costa 3, the lighter humeri, the completely black abdomen, and the shape of phallus.

Description: ♂. Body medium sized, slightly widened posteriorly, brown, lateral and anterior margins of pronotum, elytral humeri, primary and partly secondary costae, elytral suture, outer intercostal space and antennal segment 2 yellow to light brown. Head small, with hemispherically prominent but smaller eyes, interocular distance 1.61 times longer than maximum eye diameter, antennal tubercles apparent, maxillary palpi more slender, apical segment nearly parallel sided, without tubercles at the outer margin, antennae serrate (Fig. 52). Pronotum transverse, 1.61 times wider than long at midline, with only slightly elevated lateral margins and inconspicuous tubercles at basal third, surface only slightly shining, with very fine microstructure. Elytra with strong primary costae 2 and 4, rather shortened costa 3, secondary costae very weak, often interrupted, transverse costae irregular, reticulate cells variable, in average quadrate. Male genitalia robust, with a ventral process (Fig. 32). ♀: unknown.

Measurements: Length of body 7.85 mm, width at humeri 1.90 mm, length of pronotum 0.97 mm, width of pronotum 1.56 mm. ♂: interocular distance 0.64 mm, maximum diameter of eyes 0.40 mm.

Distribution: New Guinea, known from the type locality only.

3.16. *Diatrichalus parallelus* sp. n. (Figs 38, 51)

Type material: Holotype ♂. SE New Guinea, Iongai, 1700–1900 m, 9. XI. 1965, leg. J. SEDLACEK (BPBM). – Paratypes: ♂, New Guinea, Iongai, 10 km E of Mt. Edward Albert, 1450 m, 7. XI. 1965, J. SEDLACEK; – ♂, New Guinea, NE, Wau, Morobe Distr., 1700 m, 7. II. 1963, J. SEDLACEK; – 2 ♂♂, New Guinea, NE, Mt. Otto, 2200 m, 23. VI. 1955, J. L. GRESSITT (BPBM, LMBC).

Name derivation: Named according to the slender, parallel-sided antennal segments.

Differential diagnosis: *D. parallelus* differs from other metallic blue species of the genus by the shape of male antennal segments (Fig. 51) and in the male genitalia (Fig. 38).

Description: ♂. Body medium sized, slightly widened posteriorly, dark brown to black, with intensive metallic blue shine of elytra, pronotum and head. Head small, with apparent antennal tubercles, hemispherically prominent eyes, their interocular distance 1.15 times longer than maximum diameter, surface shining, sparsely pubescent, outer margin of maxillary palpi with several robust tubercles, antennae slender, slightly serrate, segments nearly parallel-sided. Pronotum transverse, only slightly narrowed anteriorly, 1.52 times wider than long at midline, lateral tubercle unclear, disc shining, sparsely pubescent. Elytra with stout primary costae, costa 1 reaching one sixth of elytral length, costa 3 weaker apically, secondary costae very weak, sometimes interrupted, mostly weaker than transverse costae, reticulate cells quadrate in average. Male genitalia considerably widened at apex (Fig. 38). ♀: unknown.

Measurements: Length of body 6.7 mm, with at humeri 1.54 mm, length of pronotum 0.69 mm, width of pronotum 1.20 mm. ♂: interocular distance 0.50 mm, maximum eye diameter 0.43 mm.

Distribution: New Guinea, known only from mountains of the north eastern part of the island.

3.17. *Diatrichalus piper* sp. n. (Fig. 20)

Type material: Holotype ♂, New Guinea, NE, Karimui, 1080 m, 8.–10. VII. 1963, J. SEDLACEK (BPBM). – Paratypes: 3 ♂♂, New Guinea, NE, Wau, 850–1500 m, 29. VII. 1961, 24. VIII. 1965, VII. 1968; – ♂, Papua, Bisuanumu, E of Port Moresby, 500 m, 8. VI. 1955, J. L. GRESSITT; – ♂, New Guinea, NE, Karimui, 1080 m, 13. VII. 1963, J. SEDLACEK; – 2 ♂♂, New Guinea, NW, Nabire, S. Geelvink Bay, 5–50 m, 1.–4. XII. 1962, 25. VIII.–2. IX. 1962, J. SEDLACEK (BPBM, LMBC).

Name derivation: One of paratypes was collected on piper and the specific name was derived from this information.

Differential diagnosis: *D. piper* differs from similar species by the shape of the male genitalia (Fig. 20) and the size of eyes.

Description: ♂. Body small to medium sized, parallel-sided to slightly widened posteriorly, dark brown. Head small, antennal tubercles apparent, but rather flat, head sparsely lightly pubescent, shining, eyes large, hemispherically prominent, interocular distance 1.05 times longer than maximum eye diameter. Maxillary palpi robust, with numerous, tiny tubercles at the outer margin, antennae acutely serrate, relatively slender. Pronotum transverse, 1.51 times wider than long at midline, lateral tubercle weak, disc lightly shining, with fine microstructure, sparsely pubescent. Elytra widest in apical fourth, primary costae equal in strength in most of their length, costa 3 shortened apically, secondary costae irregular, sometimes interrupted or weaker than transverse ones, reticulate cells irregular, mostly quadrate. Male genitalia robust, nearly parallel-sided (Fig. 20). ♀: unknown.

Measurements: Length of body 6.05 mm, width at humeri 1.42 mm, length of pronotum 0.76 mm, width of pronotum 1.14 mm. ♂: interocular distance 0.44 mm, maximum diameter of eyes 0.42 mm.

Distribution: New Guinea, not common but known from several localities scattered throughout the whole island.

3.18. *Diatrichalus proprius* sp. n. (Figs 6, 19, 53)

Type material: Holotype ♂, New Guinea NW, Wisselmeren, Itouda, Kamo Valley, 1500 m, 15. VII. 1962, leg. J. SEDLACEK (BPBM).

Name derivation: It is named according to a remarkable structure in the middle of the aedeagus.

Differential diagnosis: This species differs from all known species by the shape of the aedeagus (Fig. 19). It is characteristic also in the form of pronotum, weak and larger, longer reticulate cells, but only the holotype is known and we cannot estimate the degree of variability.

Description: ♂. Body medium sized, dark brown to black, with blue to green metallic shine especially on the elytra. Head small, eyes quite large, interocular distance 1.06 times longer than maximum eye diameter, head surface shining, with light pubescence, maxillary palpi robust, with tiny tubercles at the outer margin of apical segment, antennae scarcely serrate (Fig. 53). Maxillary palpi stout and long. Pronotum flat, slightly transverse, 1.39 times wider than long at midline, moderately nar-

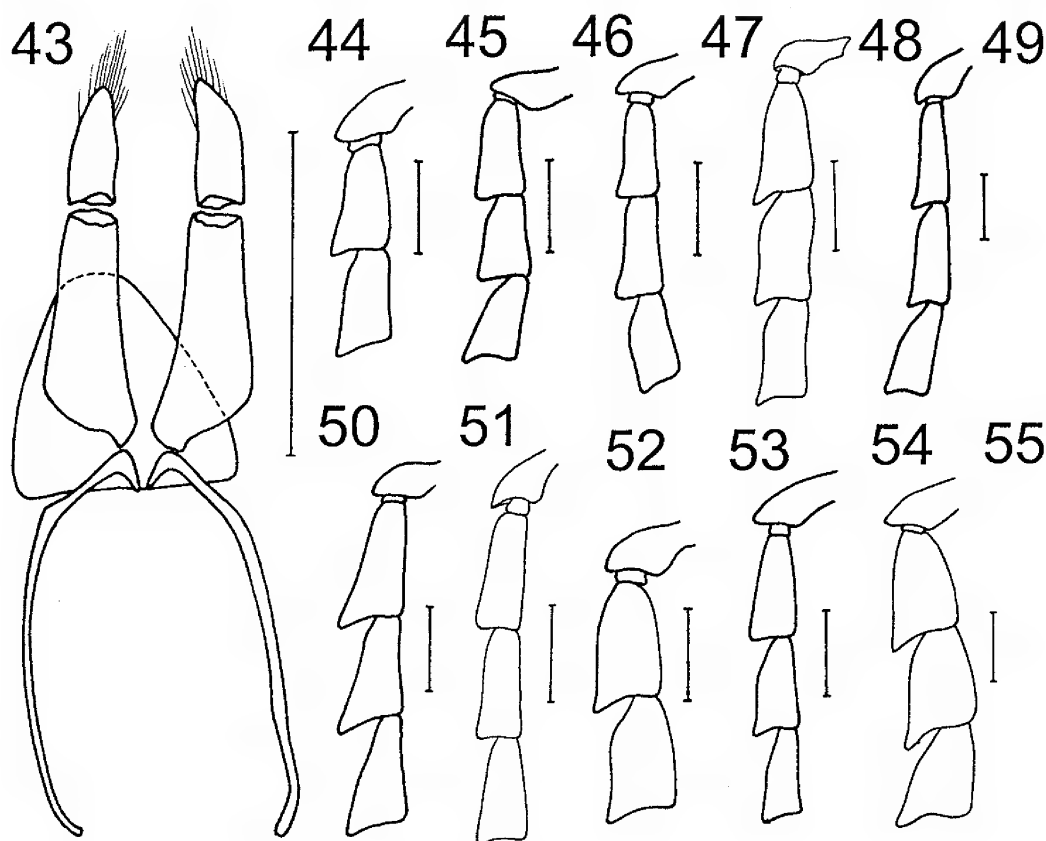


Fig. 43. *Diatrichalus cyanescens*, female genitalia.

Figs 44–55. Male basal antennal segments. – 44. *D. tenimberensis*; – 45. *D. emarginatus* sp. n.; – 46. *D. rubricostatus* sp. n.; – 47. *D. xylobanoides*; – 48. *D. aeneus* sp. n.; – 49. *D. habbema* sp. n.; – 50. *D. dentatus*; – 51. *D. parallelus* sp. n.; – 52. *D. pallidihumeralis* sp. n.; – 53. *D. proprius* sp. n.; – 54. *D. cyanescens*; – 55. *D. fenestratus* sp. n. – Scales: 0.5 mm.

rowed anteriorly, without elevated lateral margins, with conspicuous lateral costae (Fig. 6), covered with light brown pubescence. Elytra slightly dilated posteriorly, secondary costae very weak, partly missing, reticulate cells irregular, often longer than wide. Male genitalia with a very complex thorn ventrally (Fig. 19). ♀: unknown.

Measurements: Length of body 6.8 mm, width at humeri 1.5 mm, length of pronotum 0.89 mm, width of pronotum 1.23 mm. ♂: interocular distance 0.53 mm, maximum diameter of eyes 0.50 mm.

Distribution: New Guinea, known from the type locality only.

3.19. *Diatrichalus rubricostatus* sp. n. (Figs 1, 31, 46)

Type material: Holotype ♂, New Guinea (SE), Mt. Giluwe, 3300–3550 m, 2.–4. VI. 1963, leg. J. SEDLACEK (BPBM). – Paratypes: 8 ♂♂ 2 ♀♀, same locality data as holotype; – 2 ♀♀, Mt. Giluwe, 3600 m; – 2 ♂♂, Mt. Giluwe, 3400 m, 26. V. 1961; – ♂, Mt. Giluwe, 3600 m, 27. V. 1961; – ♂, Mt. Giluwe, 3700–4300 m, 29. V. 1961; – ♂ 3 ♀♀, Mt. Giluwe,

2500–2600 m, 31. V. 1963, J. SEDLACEK; – ♀, Mt. Hagen, 3400 m, 6. VI. 1966, J. L. GRESSITT; – 2 ♀ ♀, Mt. Michael, summit, 3605 m, 22. VI. 1967, G. A. SAMUELSON; – 2 ♂ ♂ 2 ♀ ♀, Ialibu, 2800 m, GRESSITT-MAA (BPBM, LMBC).

Name derivation: Named according to the very characteristic coloration of elytral costae.

Differential diagnosis: *D. rubricostatus* is very characteristic in general appearance (Fig. 1) and colour pattern. The only relative and partly similar species is *D. pallidihumeralis*, which differs by coloration and shape of the phallus. *D. rubricostatus* is the only known *Diatrichalus*, which has light apical part of abdomen resembling light producing Lampyridae.

Description: ♂. Body medium sized, slightly widened posteriorly, black, lateral margins of pronotum orange yellow, suture, primary costae, except short humeral part, and outer margin of the elytra reddish brown and covered with dense reddish pubescence; visible sternites 6–8 light brown, the rest of abdomen black. Head small, antennal tubercles rather small, apparently separated from the inner margin of the eyes, surface shining, densely pubescent, eyes small, interocular distance 1.93 times longer than maximum eye diameter, palpi robust, outer margin of apical segment with several light tubercles, basal antennal segments nearly parallel-sided (Fig. 46). Pronotum transverse, 1.64 times wider than long at midline, shining in black part, rugulose in reddish one, whole disc densely pubescent. Elytra only with costae 2 and 4 developed in whole length and often joining each other before apex, costa 1 reaching one tenth of elytral length, costa 3 half to two thirds of elytra length, transverse costae well developed but irregular, secondary costae mostly weaker, often interrupted or missing in longer intervals, then secondary costae either freely ending in middle of intercostal interval or forming step-like pattern with near opposite transverse costa. Male genitalia slender, apparently widened in apical part (Fig. 31).

Measurements: Length of body 8.0 mm, width at humeri 2.12 mm, length of pronotum 1.09 mm, width of pronotum 1.79 mm. ♂: interocular distance 0.59 mm, maximum diameter of eyes 0.31 mm.

Distribution: New Guinea, known from highest elevations of New Guinean mountains, most specimens were collected in elevations above 3300 m a.s.l., one specimen was collected even in the grass habitat of alpine zone around 4000 m a.s.l.

3.20. *Diatrichalus schawalleri* sp. n. (Fig. 26)

Type material: Holotype ♂, Irian Jaya, Manokwari, Ransiki, Mayuby/Benyas, 27.–28. VIII. 1990, leg. A. RIEDEL (SMNS).

Name derivation: *D. schawalleri* is named in honour of Dr. W. SCHAWALLER (Stuttgart).

Differential diagnosis: The eyes larger than interocular distance distinguish *D. schawalleri* from most uniformly dark New Guinean species of the genus. Similar size of eyes was found in *D. tenimberensis*, which differs by the type of the aedeagus (Fig. 26).

Description: ♂. Body medium sized, slightly widened posteriorly, dark brown to black. Head small, with well marked antennal tubercles, eyes large, hemispherically prominent, maximum eye diameter 1.09 times larger than interocular distance, maxillary palpi robust with tiny tubercles, head shining, covered with short pubescence, antennae acutely serrate. Pronotum transverse, 1.68 times wider than long at

midline, with acutely projected hind angles and nearly straight lateral margins without any tooth. Elytra with primary costae 2–4 fully developed, costa 3 only slightly shortened, secondary costae weak, but regularly present and nearly straight, reticulate cells quadrate in average. Male genitalia with slender phallus and broad sclerotized part of internal sac (Fig. 26). ♀: unknown.

Measurements: Length of body 8.35 mm, width at humeri 1.86 mm, length of pronotum 0.89 mm, width of pronotum 1.50 mm. ♂: interocular distance 0.50 mm, maximum diameter of eyes 0.54 mm.

Distribution: New Guinea, known from the type locality only.

3.21. *Diatrichalus secretus* (Kleine, 1935), **comb. n.** (Fig. 34)

Trichalus secretus Kleine, 1935 (KLEINE, 1935c: 317).

Type material: Holotype ♂, "Papua Kokoda, 1200 ft, VIII. 1933. L. E. CHEESMAN, BM 1933.577" (BMNH).

Other material examined: ♂, New Guinea, SE, Mamai Pltn., E of Port Glasgow, 150 m, 7. II. 1965, R. STRAATMAN; same locality and collector, with following data: ♂, 30. I. 1965, 2 ♂♂ 5. II. 1965, ♂, 2. II. 1965 (BPBM, LMBC).

Differential diagnosis: *D. secretus* differs from other *Diatrichalus* with big eyes by the light yellow substantial part of pronotum.

Redescription: ♂. Body small to medium sized, slightly widened posteriorly, dark brown, with wide lateral margins of pronotum light yellow. Head small, with large, prominent eyes, maximum eye diameter 1.13 times longer than interocular distance, head surface shining, covered with sparse, brown pubescence, antennal tubercles followed by very deep transverse depression. Pronotum 1.63 wider than long at midline, without apparent tubercle at lateral margin, median areola regularly connected with anterior margin through short keel. Elytra with costae 2–4 well developed, costa 3 only slightly shortened, secondary costae weak, seldom missing, reticulate cells irregular, in average quadrate. Phallus widened apically (Fig. 34). ♀: unknown.

Variability: The black patch in the middle of pronotum is variable in size and can be missing in an extreme case.

Measurements: Length of body 6.15 mm, width at humeri 1.54 mm, length of pronotum 0.79 mm, width of pronotum 1.29 mm. ♂: interocular distance 0.44 mm, maximum diameter of eyes 0.50 mm.

Distribution: New Guinea, known from south eastern part of island only.

3.22. *Diatrichalus sedlacekiae* sp. n. (Fig. 14)

Type material: Holotype ♂, NE New Guinea, Morobe District, Mt. Kaindi, 1860 m, 17. XII. 1967 (BPBM).

Name derivation: This species is named in honour of Mrs. M. SEDLACEK (Brookfield, Australia), who collected many species of New Guinean Lycidae during her journeys with her husband Mr. J. SEDLACEK.

Differential diagnosis: *D. sedlacekiae* reminds *D. humeralis* in body coloration but it differs by relatively smaller eyes, more slender, more acutely serrate antennae, more bright humeral part of elytra and different shape of male genitalia (Fig. 14).

Description: ♂. Body medium sized, brown, only humeral half of elytra yellow. Head small, with apparent antennal tubercles, surface shining, sparsely pubescent, eyes hemispherically prominent, their interocular distance 1.63 times longer than maximum eye diameter, antennae slender, acutely serrate, maxillary palpi with numerous tiny tubercles at outer margin of last segment. Pronotum small, widest at base, 1.5 times wider than long at the midline, surface partly shining, with dense pubescence. Elytra slightly widened posteriorly, first primary costa reaching only one sixth of elytral length, costa three shortened, reaching five sixth only, primary costae very stout, secondary much weaker, reticulate cells quadrate. Male genitalia with small and relatively simple internal sac and apparent projection ventrally (Fig. 14). ♀: unknown.

Measurements: Length of body 7.4 mm width at humeri 1.80 mm, length of pronotum 0.84 mm, width of pronotum 1.26 mm. ♂: interocular distance 0.54 mm, maximum diameter of eyes 0.33 mm.

Distribution: NE New Guinea, known from the type locality only.

3.23. *Diatrichalus sinuaticollis* (Pic, 1923), **comb. n.** (Fig. 40)

Trichalus sinuaticollis Pic, 1923 (Pic, 1923: 36)

Type material: Holotype ♀, "New Guinea" (MHNP).

Other material examined: ♂, Papua, Fly R., Kiunga, 35 m, VIII. 1959, J. & M. SEDLACEK; – ♂, Nabire, Geelvink Bay, 5–50 m, 25. VIII.–2. IX. 1962, J. SEDLACEK; – ♂, Vogelkopf, Bombeni, 700–900 m, 10. VI. 1959, T. C. MAA; – ♂, Wau, 1200–1300 m, 14. IX. 1963, J. SEDLACEK; – ♂, Lae, Singuawa R., 30 m, 15. IV. 1966, WILKES (BPBM, LMBC).

Differential diagnosis: Similar to *D. schawalleri* by the size of eyes and general appearance, but differs substantially by the shape of the male genitalia (Fig. 40).

Redescription: ♂. Body small to medium sized, nearly parallel-sided, dark brown. Head small, with large eyes, maximum eye diameter 1.05 times bigger than interocular distance, antennal tubercles apparent, head shining, densely pubescent, maxillary apical segment broad, with robust tubercles at outer margin, antennae serrate. Pronotum 1.4 times wider than long at midline, with weak lateral tooth. Elytra with three fully developed primary costae, costa 1 reaching one fifth of elytral length, only slightly shortened costa 3, secondary costae weak, but seldom interrupted. Phallus robust, parallel-sided (Fig. 40).

Measurements: Length of body 6.25 mm, width at humeri 1.54 mm, length of pronotum 0.83 mm, width of pronotum 1.20 mm. ♂: interocular distance 0.44 mm, maximum diameter of eyes 0.46 mm.

Distribution: New Guinea, widely distributed, but not common, most specimens collected in lowland areas.

3.24. *Diatrichalus striatus* **sp. n.** (Fig. 28)

Type material: Holotype ♂, Irian Jaya, Jayawijaya Prov., Wamena, Pronggoli, 2000–2400 m, 17.–19. IX. 1991, leg. A. RIEDEL (SMNS). – Paratype: ♂, same data (SMNS).

Name derivation: Named according to the colour pattern of the elytra.

Differential diagnosis: *D. striatus* is very characteristic in the shape of body and light humeri and the interspace between primary costa 2 and 4 in basal two thirds of elytral length. Such pattern has not been found in any other *Diatrichalus*

species but externally very similar to not yet described *Microtrichalus* was collected together with *D. striatus*. Both species are easily distinguishable under microscope by the structure of elytral costae and shape of pronotum.

Description: ♂. Body small, slender, parallel-sided, dark brown to black, pronotum brown, space between costae 1 and 4 at humeri and costae 2 and 4 in further two thirds of elytral length light brown. Head small, with rather small eyes, interocular distance 1.16 times longer than maximum eye diameter, head shining, covered with dense pubescence. Maxillary palpi stout, antennae slender, serrate. Pronotum small, transverse, 1.34–1.43 times wider than long at midline, disc shining, with dense brown pubescence. Elytra very slender, vestiges of secondary costae throughout whole interspace between suture and primary costa 2 missing in the rest of the elytra. Phallus slender, sclerotized part of internal sac very broad (Fig. 28). ♀: unknown.

Measurements: Length of body 6.0–6.2 mm, width at humeri 1.22–1.25 mm, length of pronotum 0.67–0.73 mm, width of pronotum 0.96–0.98 mm. ♂: interocular distance 0.44 mm, maximum diameter of eyes 0.28 mm.

Distribution: New Guinea, known from the type locality only.

3.25. *Diatrichalus tenimberensis* (Pic, 1930) (Figs 8, 12–13, 16, 44)

Mimotrichalus tenimberensis Pic, 1930 (PIC, 1930: 92)

Diatrichalus tenimberensis (Pic, 1930); BOČÁK (1998: 193)

Type material: Holotype ♂, "Tenimber Is, Coll. by W. DOHERTY" (MNHP).

Other material examined: ♂, New Guinea, SE, Oni Oni, Port Glasgow, 2. II. 1965, leg. R. STRAATMAN, Bishop; – 6 ♂♂, New Guinea, NE, Lae, Singuawa R., 10 m, 1.–16. IV. 1966, O. R. WILKES, light trap; – ♂, NE, Lae, VII. 1944; – ♂, Lae, sea level, 26. VII. 1955, J. L. GRESSITT; – ♂, Lae Bubia Agr. Stn., 15 m, 6. VII. 1957, D. ELMO HARDY; – ♂, Tapini, 1000 m, 9.–12. VII. 1968, leg. MENA; – ♂, NE, Bulolo R., 680 m, 23. IV. 1969, J. SEDLACEK; – ♂, NE, Ambunti, Sepik R., 150 m, 4. V. 1963; – 4 ♂♂, Wau, Morobe Distr., 1200 m, different data, J. SEDLACEK; – 3 ♂♂, NW, Nabire, Gelwink Bay, 0–50 m, 2. VII.–4. IX. 1962, J. SEDLACEK; – ♂, Neth. New Guinea, Hollandia area, W. Sentani, Cyclops Mts., 150–250 m, 19. VI. 1959, T. C. MAA; – 2 ♂♂, Biak I., 1. VII. 1962, J. L. GRESSITT; – ♂, New Britain, Linga P., W of Willaumez Pen., 11. IV. 1956, J. L. GRESSITT; – ♂ ♀ New Guinea, Papua, Normanby I., Wakaiuna, Sewa Bay, 1.–10. XII. 1956, W. W. BRANDT (BPBM, LMBC); – 3 ♂♂, Papua New Guinea Madang env., VI. 1979, W. G. ULLRICH (MHNG).

Differential diagnosis: *D. tenimberensis* differs from other known dark coloured *Diatrichalus* species known from New Guinea in relatively large eyes and the shape of male genitalia (Figs 12, 13, 16).

Redescription: ♂. Body small to medium sized, dark brown to black. Head small, antennal tubercles prominent, followed by deep, broad despression, surface shining, eyes very large, hemispherically prominent, maximum eye diameter 1.01–1.17 times bigger than their interocular distance, antennae quite broad, serrate, maxillary palpi with several papillae at outer margin of apical segment. Pronotum broad, nearly parallel-sided in basal half, surface shining, densely pubescent, pronotum widest at base, 1.63 times wider than long at midline. Elytra parallel-sided to slightly widened posteriorly, primary costae stout, secondary ones very weak, partly unclear to missing, transverse costae irregular. Male genitalia relatively slender, with apparent ventral process and short tubular basal part of phallus (Figs 12–13).

Measurements: Length of body 6.7 mm, width at humeri 1.66 mm, length of pronotum 0.80 mm, width of pronotum 1.31 mm. ♂. interocular distance 0.45 mm, maximum diameter of eyes 0.53 mm.

Distribution: New Guinea, Biak I., Normanby I., New Britain, Tenimber I., very widely distributed species.

3.26. *Diatrichalus wauensis* sp. n. (Fig. 17)

Type material: Holotype ♂, New Guinea: (NE) Wau, Morobe Distr. 1300 m, 22. XII. 1961, J. & J. H. SEDLACEK Collectors Bishop. – Paratype ♀, West New Guinea, Star Mts., Sibil Val. 1245 m, 18. X.–8. XI. 1961, S. QUATE & L. QUATE (BPBM).

Name derivation: The species is named after the holotype locality data.

Differential diagnosis: *D. wauensis* differs externally from other species with missing secondary costae in the lighter margins of pronotum and in the characteristic slender phallus (Fig. 17).

Description: ♂. Body small to medium sized, slightly dilated posteriorly, dark brown to black, only lateral margins of pronotum light brown. Head small, antennal tubercles present, surface shining, eyes rather smaller, interocular distance 1.27 times longer than maximum eye diameter, maxillary palpi with robust tubercles, antennae serrate, Pronotum transverse, 1.61 times wider than long at midline, without lateral tubercle, median areola connected with anterior margin through short keel, frontal angles apparent, basal margin nearly straight. Elytra with secondary costae missing, primary costa 1 reaching one quarter of elytral length, costa 3 nearly as long as remaining ones. Male genitalia with slender phallus (Fig. 17).

Measurements: Length of body 6.85 mm, width at humeri 1.69 mm, length of pronotum 0.78 mm, width of pronotum 1.25 mm. ♂: interocular distance 0.52 mm, maximum diameter of eyes 0.41 mm.

Distribution: New Guinea, only two specimens were collected in very distant localities on the island.

3.27. *Diatrichalus xylobanoides* Kleine, 1926 (Figs 5, 23–24, 47)

Diatrichalus xylobanoides Kleine, 1926 (KLEINE, 1926: 167).

Type material: Holotype ♂, “D. N. Guinea, 285, Hunsteinspitze, 3. III. 1943, Kais. Augustall. Exp., BÜRGERS S. G.” (NHMB).

Differential diagnosis: *D. xylobanoides* is characteristic externally in the completely dark brown body, small eyes in male and completely missing secondary longitudinal costae on the elytra; the slender phallus without ventral process has not been found in any other *Diatrichalus* species (Figs 23–24).

Redescription: ♂. Body medium sized, dark brown to black, head small, surface shining, covered with short, lighter pubescence, antennal tubercles less prominent, depression behind them shallow, eyes smaller, interocular distance 1.56 times longer than the maximum eye diameter, antennae serrate (Fig. 47). Pronotum flat, 1.45 times wider than long at midline, surface shining (Fig. 5). Elytra with stout primary costae, secondary costae missing, transverse costae seldom y-shaped, not very dense, but reticulate cells never quadrate. Male genitalia slender, without ventral process (Figs 23–24).

Measurements: Length of body 7.0 mm, width at humeri 1.85 mm, length of pronotum 0.92 mm, width of pronotum 1.33 mm. ♂: interocular distance 0.35 mm, maximum diameter of eyes 0.55 mm.

Distribution: New Guinea.

4. Identification key of males of the New Guinean species of the genus *Diatrichalus*

In most species the identification of females is impossible without extensive series representing both sexes. The key is using characters common in both sexes as long as possible but in many cases it was necessary to use only the shape of male genitalia or the ratio expressing the relative size of male eyes.

- 1 Whole dorsal side of body dark brown to black, often with apparent metallic shine . . 13
- At least some part of the body brightly coloured, usually yellow, red or light brown . . 2
- 2 Pronotum dark brown to black, without any lighter part 3
- Pronotum light yellow, yellow or red at lateral margins or at least narrow lateral margins light brown 6
- 3 Only humeral third to half of elytra yellow to pale ochre 4
- Lightly yellow coloured part of elytra present also in the apical half of elytra 5
- 4 Male genitalia open, without any process in the middle of ventral part of the phallus (Fig. 30), humeral part of elytra very pale ochre, the transition between light and dark part of the elytra gradual, eyes relatively large, their interocular distance 1.06 times longer than their maximum diameter *D. humeralis* sp. n.
- Male genitalia without apparent process in the middle of ventral part of phallus (Fig. 14), humeral part of elytra yellow, the transition between light and dark part of the elytra sharp, eyes much smaller, their interocular distance 1.63 times longer than their maximum diameter *D. sedlacekiae* sp. n.
- 5 Only two rounded white to light yellow patches present in apical third of elytra, humeral part of elytra dark brown to black, male genitalia relatively robust (Fig. 27) *D. bipunctatus* sp. n.
- Humeral third of elytra and wide transverse band in apical third of elytra yellow, phallus more slender (Fig. 29) *D. fasciatus* sp. n.
- 6 Whole elytra dark brown to black 7
- At least some part of elytra brightly coloured or light brown 8
- 7 Only middle part of pronotum darker, dark part occupying less than half of pronotal width, secondary costae weak, but mostly present, only seldom interrupted, reticulate cells quadrate, male genitalia with constricted apical part of phallus and with another constriction in apical third (Fig. 34) *D. secretus* (Waterhouse)
- Only narrow margins of pronotum light brown, combined width of both light pronotal margins represent approximately one quarter of pronotal width, secondary costae completely missing in the middle part of elytra, small vestiges present at humeri only, elytral reticulate cells strongly transverse, phallus simply elliptic in apical part (Fig. 17) *D. wauensis* sp. n.
- 8 Head and basal antennal segments (1–4) yellow (Aru Is., not yet known from New Guinea) *D. aptus* (Kleine)
- Head and basal antennal segments dark brown to black 9
- 9 Pronotum, humeral two thirds of elytra and partly ventral side of thorax yellow, male genitalia with very long, slender process of internal sac (Fig. 18) *D. mancus* (Kleine)
- Middle part of pronotum dark brown, elytra otherwise coloured 10
- 10 Pronotum and elytra light brown, disc of pronotum partly darker . . . *D. habbema* sp. n.
- Elytra never unicoloured, always with some combination of dark and bright parts . . 11
- 11 Humeri and interspace between primary costa 1 and 3 in basal two thirds of elytra yellow, body slender, 4 parallel-sided, male genitalia as in fig. 28 *D. striatus* sp. n.
- Elytra otherwise coloured, either lateral margins and elytral suture yellow or only primary costae lighter, elytra widened posteriorly 12
- 12 Base of humeri light as well as lateral margins of elytra, primary elytral costa light brown in whole length, third elytral primary costa only slightly shortened, reaching at least three quarters of elytral length, male genitalia as in fig. 32 *D. pallidihumeralis* sp. n.

- Only primary elytra costae reddish except narrow humeral part of elytra, primary elytral costa 3 considerably shortened, never reaching further than two thirds of elytral length, elytra widest in the middle part, male genitalia as in fig. 31 *D. rubricostatus* sp. n.
- 13 Secondary longitudinal costae completely missing, only seldom some y-shape connections of transverse costae present, reticulate cells transverse 14
- Secondary longitudinal costae present, although weak and sometimes interrupted, transverse cells mostly quadrate or of irregular shape, never predominantly transverse 17
- 14 Elytra with apparent metallic shine, interocular distance 1.3 times longer than maximum eye diameter, male genitalia as in fig. 33 *D. emarginatus* sp. n.
- Elytra without apparent metallic shine, mat, dark brown to black 15
- 15 Eyes very small, their interocular distance 1.35–1.56 times longer than maximum eye diameter 16
- Eyes larger, their interocular distance about 1.10 times longer than maximum eye diameter, phallus as in fig. 25 *D. biroi* Kleine
- 16 Transverse elytral costae dense, regular, reticulate cells strongly transverse, male genitalia laterally compressed, phallus with robust ventral process, internal sac with very long, slender process (Fig. 15) *D. cerberus* (Bourgeois)
- Transverse costae less dense, reticulate cells slightly transverse, male genitalia with slender phallus (Figs 23–24) *D. xylobanoides* Kleine
- 17 Dorsal side of body dark brown to black, without metallic shine 18
- Dorsal side of body with apparent blue, bronze or green metallic shine 22
- 18 Male genitalia without any process in ventral side, internal sac very broad (Fig. 26) *D. schawalleri* sp. n.
- Male genitalia with apparent process in ventral side of phallus 19
- 19 Phallus open ventrally in basal part, internal sac as in fig. 20 *D. piper* sp. n.
- Phallus closed ventrally 20
- 20 Ventral process robust, tubular basal part of phallus shorter than open apical one, internal sac with long, slender process (Figs 12–13, 16) *D. tenimberensis* (Pic)
- Ventral process smaller, tubular basal part of phallus apparently longer than open apical ones, internal sac without long slender process, shape of internal sac very characteristic (Fig. 40) 21
- 21 Male eyes smaller than their interocular distance, elytra relatively long, slightly widened posteriorly as in fig. 3, body larger (9.0 mm) *D. fenestratus* sp. n.
- Male eyes larger than their interocular distance, elytra relatively shorter, nearly parallel-sided, body smaller (5.5–6.5 mm) *D. sinuaticollis* (Pic)
- 22 Elytra apparently dilated posteriorly (Fig. 2) 27
- Elytra parallel-sided or only slightly dilated posteriorly (Fig. 3) 23
- 23 Elytra slender, 3.7–4.3 times longer than combined length at humeri, with apparent bronze to green metallic shine, body length 7.6–10.6 mm *D. aeneus* sp. n.
- Elytra broader, 3.4–3.8 times longer than combined length at humeri, metallic shine always blue, never bronze, body length 6.3–9.5 mm 24
- 24 Ventral process of phallus very complex (Fig. 19) *D. proprius* sp. n.
- Ventral process of phallus simple, short (Figs 21, 35–38) 25
- 25 Eyes much smaller, their interocular distance at least 1.3 times longer than maximum eye diameter, male genitalia as in fig. 21 *D. dentatus* (Kleine, 1926)
- Diameter of eyes approximately as long as their interocular distance 26
- 26 Male antennal segments 3–6 nearly parallel-sided, male genitalia slender in basal part, apparently widest in apical third (Fig. 38) *D. parallelus* sp. n.
- Male antennal segments serrate (Fig. 54), phallus more or less parallel-sided (Figs 35–37) *D. cyanescens* (Bourgeois)
- 27 Male genitalia slender (Fig. 22), interocular distance in male 1.35 times longer than maximum eye diameter *D. metallicus* (Kleine)
- Male genitalia robust (Figs 41–42), eyes as large as their interocular distance *D. dilatatus* sp. n.

5. Species excluded from the genus *Diatrichalus*

Trichalus ternatensis (Kleine, 1930), **comb. n.**

Diatrichalus ternatensis Kleine, 1930 (KLEINE, 1930: 329).

Type material: Holotype ♀, "Ins. Ternate, Doherty, VIII, Brit. Mus 1923–320" (BMNH).

6. The list of species from other regions transferred to the genus *Diatrichalus*

Diatrichalus aptus (Kleine, 1926), **comb. n.**

Trichalus aptus Kleine, 1926 (KLEINE, 1926: 175).

Type material: Holotype ♀, "Aru I., E. Indies, 1909, W. STALKER" (BMNH).

Diatrichalus assimilis (Kleine, 1926), **comb. n.**

Trichalus assimilis Kleine, 1926 (KLEINE, 1926: 172).

Type material: Lectotype ♂ (hereby designated), "Neu-Britannien, Ralum, F. DAHL S." (NHMB).

Diatrichalus funereus (Blackburn, 1900), **comb. n.**

Trichalus funereus Blackburn, 1900 (BLACKBURN, 1900: 51)

Type material: Holotype ♂, Australia, BLACKBURN Coll., BM 1910.236 (BMNH).

Diatrichalus insulanus (Kleine, 1933), **comb. n.**

Trichalus insulanus Kleine, 1933 (KLEINE, 1933b: 12).

Type material: Holotype ♀, "Jandema, Tenimber, Doherty VI–VII" (BMNH).

Diatrichalus kershawi (Lea, 1908), **comb. n.**

Diatrichalus kershawi Lea, 1908 (LEA, 1908: 159).

Material examined: ♂, "Western Distr., Victoria", identified by R. KLEINE (ZMPA).

Diatrichalus niger (C. O. Waterhouse, 1879), **comb. n.**

Trichalus niger C. O. Waterhouse, 1879: (C. O. WATERHOUSE, 1879: 71),

= *Trichalus nigricolor* Pic, 1927 (PIC, 1927: 42), **syn. n.**,

= *Trichalus niger* var. *notaticollis* Pic, 1927 (PIC, 1927: 42), **syn. n.**,

= *Trichalus niger* var. *angustatus* Pic, 1927 (PIC, 1927: 42), **syn. n.**,

= *Trichalus concolor* Kleine, 1927 (KLEINE, 1927: 312), **syn. n.**

Type material: 1 spec., holotype of *Trichalus niger*, "Java" (BMNH); – 1 spec., holotype of *T. nigricolor*, "Kina Balu, Borneo" (MHNP); – holotype ♀ of *T. niger* var. *notaticollis*, "Tji Solok, Java" (MHNP); – lectotype ♀ of *T. niger* var. *angustatus* (hereby designated), "Java occident, Sukabumi, 2000', 1893, H. FRUHSTORFER" (MHNP); – 3 spec., paralectotypes "Java, Soekaboemi" (MHNP); – holotype ♀ of *D. concolor*, ♀, type, "Java, Noeba Kemrancak, DRESCHER" (ZMAN).

Diatrichalus puerilis (Kleine, 1935), **comb. n.**

Falsotrichalus puerilis Kleine, 1935 (KLEINE, 1935b: 180).

Type material: ♂, "Solomon Islands, R. A. LEVER" (BMNH).

Diatrichalus salomonensis (Kleine, 1933), **comb. n.**

Flabellotrichalus salomonensis Kleine, 1933 (KLEINE, 1933b: 13).

Type material: Holotype ♂, "Solomon Is., Ruavatu, Guadalcanal 1931, R. A. LEVER" (BMNH); – paratype ♂, "Lingatu, Russel I." (BMNH).

Other material studied: 1 spec., "Tulagi, British Solomons, R. J. A. W. LEVER, 7. 1933" (BMNH).

Diatrichalus semicostatus (Blackburn, 1891), **comb. n.**

Trichalus semicostatus Blackburn, 1891 (BLACKBURN, 1891: 525).

Material examined: ♂, "Victoria, Australia", identified by R. KLEINE (ZMPA).

Diatrichalus signatus (Kleine, 1939), **comb. n.**

Diatrichalus signatus Kleine, 1939 (KLEINE, 1939a: 19).

Type material: Holotype ♀, "L. J. TOXOPEUS, Buru Station 1, 10. ii.–16. iii. 21" (ZMPA).

Diatrichalus typicus (Kleine, 1939), **comb. n.**

Trichalus typicus Kleine, 1939 (KLEINE, 1939b: 133).

Type material: 1 spec., holotype, "Zuid Celebes, Hanggala, 900m, Rantepao, F. C. DRESCHER" (ZMPA). Abdomen missing, sex unsure.

Diatrichalus vicarius (Kleine, 1935), **comb. n.**

Falsotrichalus vicarius Kleine, 1935b (KLEINE, 1935b: 179)

Type material: Holotype ♂, "Solomon Is., Mala Sin, R. A. LEVER, 24. 5. 34" (BMNH).

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